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# **Joint Doctrine for Barriers, Obstacles, and Mine Warfare**



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# PREFACE

## 1. Scope

This publication provides barrier, obstacle, and mine warfare guidelines for the planning and execution of theater strategy, campaigns, and joint operations across the range of military operations. It focuses on national policy, international law, and operational and logistic considerations peculiar to the preparation and conduct of joint military operations involving barriers, obstacles, and mine warfare.

## 2. Purpose

This publication has been prepared under the direction of the Chairman of the Joint Chiefs of Staff. It sets forth doctrine to govern the joint activities and performance of the Armed Forces of the United States in joint operations and provides the doctrinal basis for US military involvement in multinational and interagency operations. It provides military guidance for the exercise of authority by combatant commanders and other joint force commanders and prescribes doctrine for joint operations and training. It provides military guidance for use by the Armed Forces in preparing their appropriate plans. It is not the intent of this publication to restrict the authority of the joint force commander (JFC) from organizing the force and executing the mission in a manner the JFC deems most appropriate to ensure unity of effort in the accomplishment of the overall mission.

## 3. Application

a. Doctrine and guidance established in this publication apply to the commanders of combatant commands, subunified commands, joint task forces, and subordinate components of these commands. These principles and guidance also may apply when significant forces of one Service are attached to forces of another Service or when significant forces of one Service support forces of another Service.

b. The guidance in this publication is authoritative; as such, this doctrine (or JTTP) will be followed except when, in the judgment of the commander, exceptional circumstances dictate otherwise. If conflicts arise between the contents of this publication and the contents of Service publications, this publication will take precedence for the activities of joint forces unless the Chairman of the Joint Chiefs of Staff, normally in coordination with the other members of the Joint Chiefs of Staff, has provided more current and specific guidance. Commanders of forces operating as part of a multinational (alliance or coalition) military command should follow multinational doctrine and procedures ratified by the United States. For doctrine and procedures not ratified by the United States, commanders should evaluate and follow the multinational command's doctrine and procedures, where applicable.

For the Chairman of the Joint Chiefs of Staff:



V. E. CLARK  
Vice Admiral, US Navy  
Director, Joint Staff

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## EXECUTIVE SUMMARY

### COMMANDER'S OVERVIEW

- Provides Basic Concepts Regarding Barriers, Obstacles, and Mines
  - Covers Joint Command, Control, and Planning
  - Discusses Friendly Employment of Barriers, Obstacles, and Mines
  - Covers Countering Enemy Employment of Barriers, Obstacles, and Mines
- 

### General

*Employment of barriers, obstacles, and mine warfare can enhance a commander's ability to mass combat power, sustain the force, conduct offensive or defensive operations, achieve surprise, and use or restrict key terrain, airfields, or sea routes.*

**Barrier, obstacle, and minefield employment** can have significant operational impact with minimal risk to friendly forces. Minefields can attrit enemy forces and destroy or neutralize their equipment. Use of barriers, obstacles, and minefields can also be used as a psychological tool to discern enemy intentions and create uncertainty for the enemy commander. In the defense, barriers, obstacles, and minefields can immobilize and canalize enemy forces by taking advantage of terrain by adding strength and depth to the battlefield. The major disadvantages of using barriers, obstacles, and minefields are the time, personnel, equipment, and materiel required to construct and eventually clear them. Additionally, they can be bypassed or cleared and may cause casualties to friendly forces and noncombatants, as well as limit friendly mobility.

### Levels of Employment

*There are three levels of employment of barriers, obstacles and mines: strategic, operational, and tactical.*

**Strategic employment** can enhance deterrence without posing an offensive threat. **Operational employment** can help protect friendly ports, lines of communications, and key facilities and free combat forces for offensive employment. **Tactical employment** is normally done to achieve tactical offensive or defensive objectives. Barrier, obstacle, and minefield employment can be used in **land, maritime, and air operations**. The **joint force commander (JFC)** is responsible for ensuring that employment of barriers, obstacles, and mines conforms with international law and US policy. To facilitate

compliance, **rules of engagement (ROE)** for employment of mines are normally included in operation plans and operation orders.

### Command and Control Considerations

*Joint force commanders are subject to definitive US policy and guidance promulgated by the National Command Authorities and the Chairman of the Joint Chiefs of Staff.*

The **National Command Authorities (NCA) decision making process evaluates the probable effects** of strategic barrier, obstacle, and mine warfare employment across the range of military operations. The employment of mines in international waters or foreign territories (including territorial seas) is generally a hostile act, thus requiring NCA authorization. **ROE are directives** that authorize and delineate the circumstances and limitations on the use of force. ROE are generally mission-oriented and action-specific. Coordination must be achieved between political goals, multinational forces, and intertheater support.

### Planning Considerations

*To achieve the maximum effect from an operational barrier, obstacle, or minefield, certain factors must be considered.*

Barriers, obstacles, and minefields that have operational significance are **usually formed around an existing terrain feature** (e.g., mountain chain or a strait) or a manmade structure (e.g., air base, canal, highway, or bridge). The element of surprise is very important. In the **offense**, the priority of barrier, obstacle, and minefield employment is to **enhance and protect the friendly force's ability to maneuver**. This is achieved by controlling the movement of enemy ground and naval forces and degrading the operability of enemy air bases. In the **defense**, the priority for barrier, obstacle, and minefield emplacement is directed toward **degrading the enemy's ability to maneuver**, destroying or attriting the enemy force, supporting economy of force measures, and retaining key terrain or areas of significant political, strategic, operational, or tactical value — in other words, adding depth and time to the battlespace. The employment of **air-delivered scatterable mines** normally requires close coordination between other components during both the planning and employment of phases of the operation. Denial operations, deception tactics, and political and psychological considerations are also a large factor in using barriers, obstacles, and minefields.



## General Planning Sequence

*Barrier, obstacle, and minefield planning is a top-down procedure.*

The commander's intent, intelligence preparation of the battlespace, concept of operations, and fire support plan at each level is part of the planning process. Barrier, obstacle, and mine warfare planning requires **timely and reliable all-source counterintelligence and intelligence support**. Planning for the use of barriers, obstacles, and mines involves the **acquisition, storage, maintenance, distribution, and security of the material** as well as **communication support** to facilitate command and control of joint and multinational operations.

## Employment Principles

*Barriers, obstacles, and minefields should be evaluated from both an offensive and a defensive posture.*

**Barriers, obstacles, and minefields should directly support the JFC's plan.** They should be carefully matched to the terrain with a maneuver concept that focuses on enemy forces as objectives. **Coverage by observation and, if necessary, fire is essential** in order to restrict enemy breaching efforts, maneuver, and massing of forces and to increase the destruction of the enemy. Barriers, obstacles, and minefields are more effective when employed in depth. The different types of resources range from **land mines** (conventional or scatterable), **sea mines**, **demolition obstacles** (created by the detonation of explosives), **constructed obstacles**, or **flame field expedients**. **Offensive employment** focuses on isolating the battlefield, facilitating economy of force, enhancing overall force security, and blocking or delaying an enemy's withdrawal. **Defensive employment** focuses on degrading enemy capabilities by disrupting combat formations and delaying their movement, interfering with command and control, and confusing enemy commanders. **Reporting, recording, and marking barriers, obstacles, and minefields is imperative to ensure the safety of friendly forces and noncombatants.**

### Maritime Operations

*In conjunction with other maritime and air assets, the aim of maritime mining is control of the sea.*

The NCA has tasked the geographic combatant commanders with the responsibility for the conduct of maritime mine warfare within their areas of responsibility and in support of other combatant commanders' maritime mine warfare requirements. The geographic combatant commanders have delegated the responsibility for planning maritime mine warfare operations to their Navy component commanders. **Mining can be used at all levels of war and across the range of military operations** to achieve the objectives of friendly forces. Mining can delay and attrit enemy maritime forces and can deny them the unrestricted use of sea areas of passage. Barriers, obstacles, and minefields can also protect friendly harbors, channels, and seaways as well as shorelines susceptible to enemy amphibious operations.

*The basic types of minefields are characterized as offensive, defensive, or protective.*

**Offensive minefields** (which include strategic fields) are those planted in enemy-controlled waters. **Defensive minefields** are those employed in contested waters to intercept the transit of enemy combatant forces. **Protective minefields** are those employed in friendly waters to protect friendly ports, harbors, or inshore sea lines of communications. A **minelaying operation** consists of planning the minefield, preparing the material and personnel to conduct the laying, planning the laying mission, laying the mines, conducting follow-on surveillance and, if required, replenishing the minefield.

### Countering Enemy Employment on Land

*Successful land operations depend on the freedom to maneuver.*

Terrain conditions, enemy tactics, and integrated fires, barriers, obstacles, and minefields can limit friendly maneuver capability. **Operations to counter the use of natural and manmade barriers, obstacles, and minefields by enemy forces** may involve the employment of conventional, airmobile, airdropped, amphibious, or special operations forces. These operations are normally supported by combat engineer forces. **Intelligence collection plans, an element of deception, and logistic support** are important factors for planning and operational support. The following must be considered in countering enemy employment of barriers, obstacles, and minefields: preparation; detection of minefields; reconnaissance of enemy barriers, obstacles, and minefields; bypass considerations; and breaching (whether it be in-stride breaching, deliberate breaching, assault breaching, or clandestine breaching). **Recording, reporting, and marking** must be sent immediately through appropriate channels and incorporated in intelligence data.

## Countering Enemy Employment at Sea

*Maritime mine countermeasures include all actions undertaken to prevent enemy mines from altering friendly forces' maritime plans or operations.*

**Mine countermeasures (MCM) reduce the threat and effects of enemy-laid sea mines** on both friendly naval force and seaborne logistic force access to, and transit of, selected waterways. MCM are divided into two broad areas: **proactive MCM** destroy enemy mine manufacturing and storage facilities or mine laying platforms before the mines are laid; **enabling MCM** are designed to counter mines once they have been laid through passive or active MCM. Three primary **passive measures** are practiced: localization of the threat, detection and avoidance of the minefield, and risk reduction. **Active MCM** entail either physical interference with the explosive functioning of the mine or actually destroying it through minehunting or minesweeping. Before maritime MCM operations, **intelligence may indicate the types, quantities, or locations of mine storage sites**. A key to countering any mine is a detailed knowledge of the mine sensor and targeting circuitries. The **MCM planning process** begins with an estimate of the situation and a mission statement and results ultimately in production of an MCM tasking order.

## CONCLUSION

This publication provides guidance for the planning and execution of barriers, obstacles, and mine warfare operations across the range of military operations. Barriers, obstacles, and mines can be employed during both offensive and defensive operations on land and at sea. The emplacement and/or construction of barriers, obstacles, and minefields requires extensive coordination within the joint force.

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# CHAPTER I

## INTRODUCTION

*"Everything that is shot or thrown at you or dropped on you in war is most unpleasant but of all horrible devices, the most terrifying. . . is the land mine."*

Sir William Slim, Unofficial History, 1959

### 1. General

Employment of barriers, obstacles, and mine warfare can, in concert with other capabilities, enhance a commander's ability to mass combat power, sustain the force, conduct offensive or defensive operations, achieve surprise, and use key terrain, airfields, or sea routes. A joint force commander (JFC) must consider both friendly and enemy employment of these capabilities in preparing plans and conducting operations.

### 2. Barrier, Obstacle, and Mine Employment

a. **Advantages and disadvantages** of barrier, obstacle, and minefield employment are listed in Figure I-1.

#### b. Levels of Employment

- **Strategic Employment.** Before hostilities, barriers, obstacles, and minefields can enhance deterrence without posing an offensive threat. **Defensive employment** along a hostile land border can demonstrate friendly resolve. **Maritime defensive and protective mining** can help protect friendly ports and waters. **Pre-hostility employment** would be as directed by the National Command Authorities (NCA). NCA determination would be based, in part, on the political signals sent and on concurrence by affected friendly nations. Should deterrence fail, offensive maritime mining of enemy ports and waters can constrict enemy seaborne economic war sustainment efforts and

reduce enemy ability to safely deploy maritime forces. Similarly, **offensive employment** of air-delivered scatterable mines can deny or restrict enemy strategic mobility and sustainability efforts.

- **Operational Employment.** Defensive barrier, obstacle, and minefield employment can **help protect friendly ports, lines of communications (LOCs), and key facilities and free combat forces for offensive employment.** Offensive employment can protect friendly maneuver while disrupting enemy ability to concentrate or maneuver forces. **Barriers and obstacles having operational significance usually differ in scale from those having tactical significance.** However, size alone does not make an obstacle operationally significant. At the operational level, their primary use is the restriction of enemy maneuver options or the creation of friendly maneuver options. **Major natural terrain features** and a focus on the enemy **provide the foundation for the development of an obstacle or barrier plan.** Operational barriers and obstacles may be created by the composite effect of many closely coordinated tactical obstacles or by the reinforcement of natural obstacles to form large terrain or massive obstacles. An example of a massive obstacle is the temporary flooding caused by the destruction of a major dam on a river. This, however, is only temporary in nature. **Mines can also contribute to gaining air superiority.** Mines can delay efforts to

## BARRIER, OBSTACLE, AND MINE EMPLOYMENT

### ADVANTAGES

- Provide the capability to inflict significant equipment and psychological damage and personnel casualties on the enemy
- Extend, strengthen, and deepen other defensive and offensive measures to support the concept of operations
- Immobilize the enemy until barriers, obstacles, or minefields can be bypassed, breached, or cleared
- Exploit geographic features
- Free forces for other employment
- Discern enemy intentions – commitment of breach assets into a minefield is a detectable indication of intent
- Create uncertainty for the enemy commander

### DISADVANTAGES

- Creation and removal can consume a significant amount of time, materiel, equipment, and transportation and will be manpower intensive and hazardous
- Can be bypassed, breached, or cleared
- Can cause casualties to friendly forces and noncombatants, as well as limit friendly mobility
- Defensive minefields must be rendered safe following their operational usefulness

Figure I-1. Barrier, Obstacle, and Mine Employment

repair damage to air bases caused by immediate effects munitions, thus degrading or denying the base's capability to launch or recover aircraft. Mines can also restrict the deployment of mobile, surface-based air defenses, as well as surface-to-surface systems, because rapid movement in a mined area increases the risk of a mine encounter. Mines can also disrupt logistic

sustainment operations being performed in the enemy's rear area.

- **Tactical Employment. Employment at the tactical level**, such as the creation or countering of barriers, obstacles, or minefields, **is normally done to achieve tactical offensive or defensive objectives.**

### 3. Threat

a. **Land.** US forces may encounter barriers, obstacles, and minefields across the range of military operations. This is especially true in areas with highly restrictive terrain such as mountains or jungles. US forces may be faced with highly mobile enemy forces supported by lethal air and ground fires. **Enemy surveillance capabilities may determine the effectiveness of employing friendly barriers, obstacles, and minefields.** The timing and methods of emplacement may be determined by the air situation. **Enemy forces may make extensive use of barriers, obstacles, and minefields,** including modern as well as technologically obsolete mines and booby traps, remotely scatterable mines, and a variety of countermeasures to defeat friendly barriers, obstacles, and minefields. Because of the relatively low cost of mines and their worldwide availability, **US forces must be prepared to counter their use throughout the range of military operations.** In addition, enemy use of nuclear munitions and chemical mines must be anticipated. The threat of terrorist employment of mines, explosives, and booby traps may necessitate defensive measures to reduce the vulnerability of US personnel, equipment, and facilities.

b. **Maritime.** Enemy mine laying operations may be conducted against **friendly ports, harbors, and sea lines of communications (SLOCs).** Mines may also be used in other areas vital to US and multinational maritime forces such as amphibious objective, fire support, and carrier battle force operating areas. **The relatively low cost of mines makes them an ideal weapon for all nations with access to them.** The application of technology by industrially advanced countries has produced a sophisticated, effective form of maritime mine warfare. Nevertheless, older mine technologies remain effective. **The ease of laying mines by ship, aircraft, or submarine presents a valid threat** to a commander who



*US forces must be prepared to encounter minefields throughout the range of military operations.*

must rely on naval support or on seaborne reinforcement and resupply. Maritime power projection and resupply forces originate from friendly ports. During amphibious operations, assault and assault follow-on shipping must transit narrows and operate in shallow waters. The enemy can place these forces at risk, with little cost to its own forces, by laying only a few mines.

c. **Air.** Control of airspace is essential to effective surface operations. Enemy use of mines could pose a major threat to the ability to conduct effective air operations. The enemy might employ sea mines in an area where aircraft carriers would need to operate to be within effective range of the enemy. The enemy might also employ scatterable mines, along with immediate effects munitions, in attacks against friendly air bases ashore. Scatterable mines could seriously disrupt and

### THE MINING OF HAIPHONG

In a surprise operation at 0859 on 8 May 1972, Commander Roger Sheets led three Marine A-6 intruder and six Navy A-7 Corsair attack planes from *Coral Sea* (CVA 43) over the river approaches to Haiphong through which most of North Vietnam's imported war material and all of its fuel supply passed. The American planes took only two minutes to lay their strings of thirty-six 1000-pound, Mark 52 mines before heading back to their waiting carrier. In succeeding days and months, other carrier aircraft laid thousands of mines and 500-pound, Mark 36 Destructors in the seaways of secondary ports and "reseeded" the Haiphong approaches.

The results were dramatic. For the remainder of 1972, twenty-seven Sino-Soviet bloc merchant ships remained trapped in Haiphong. None of the nations trading with Hanoi elected to risk steaming their merchant ships through the activated American minefields. The mining campaign, in conjunction with US air attacks on North Vietnam's land lines of communication, severely curtailed the supply of vital munitions to Communist forces mounting the "Easter Offensive" in South Vietnam.

SOURCE: Dr. Edward J. Marolda, "Operation END SWEEP,"  
Naval Historical Center, 1993

delay air base launch and recovery operations, disrupt logistic sustainment operations to the air base, and thereby limit friendly air operations.

#### 4. International Law and US Policy

The JFC is responsible for ensuring that **employment of barriers, obstacles, and mines conforms with international law and US policy**. To facilitate compliance, rules of engagement (ROE) for employment of mines are normally included in operation plans (OPLANs) and operation orders (OPORDs). Enemy or friendly employment of barriers, obstacles, and mines that does not comply with international law should be documented and reported. The **JFC staff judge advocate** and **political advisor** can assist by being actively involved with the JFC staff during the planning and execution of mine warfare.

a. **International Law.** International law and practice regulate the use of the seas, each nation's rights regarding its national territory

and waters, the initiation and conduct of armed conflict, and limitations regarding employment and types of weapons.

- The law of armed conflict postulates two counterbalancing principles: **military necessity** and the avoidance of **unnecessary suffering**. The principle of **military necessity** authorizes the use of force required to accomplish the mission. It does not authorize acts otherwise prohibited by the law of war. The principle of avoiding **unnecessary suffering** (also referred to as **superfluous injury**) prohibits injury to persons or damage to objects that may be considered superfluous to achievement of the intended objective. It limits injury to combatants, collateral injury to civilians not taking a direct part in hostilities, and collateral damage to civilian objects if wanton or excessive. The law of war prohibition on unnecessary suffering constitutes acknowledgment that, in war, there is necessary suffering. A third principle, **proportionality**, may be



viewed as a fulcrum for balancing **military necessity** and **unnecessary suffering**. Finally, **distinction** is the customary international law obligation of parties to a conflict to engage only in military operations in which the effects distinguish between the civilian population (or individual civilians not taking a direct part in hostilities), and combatant forces, directing the application of force solely against the latter. Each of these principles has been considered in the development of treaties relating to the employment of mines and in US doctrine.

- The United Nations (UN) Charter admonishes member states to refrain from the threat or use of force against the territorial integrity or political independence of any state, except in two situations: individual or collective self defense, and as authorized by the Security Council or other competent regional agency. The employment of mines in these situations must comply with all relevant treaties and customary law.
- **The Hague Convention (VIII) of 1907**, which addresses the use of sea mines, **has achieved almost universal acceptance by nations**. The relevant provisions of this convention are summarized in Figure I-2. No belligerent has as yet asserted that the laying of mines developed since 1907 (magnetic, acoustic pressure) is not governed by Hague VIII.
- The 1980 United Nations Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, commonly referred to as the Convention on Conventional Weapons (CCW) is a law of war treaty governing the use of certain conventional weapons

which may be deemed to be excessively injurious or to have indiscriminate effects. Restrictions include: (1) requirements to record minefield locations and disclosure of location at conclusion of hostilities; (2) requirements on use of mines or booby traps in areas containing concentrations of civilians; and (3) prohibition on types of booby traps; and (4) requirements to mark minefields.

Note: The CCW and its Protocols I and II entered into force for the United States on 24 September 1995. On 7 January 1997, the President transmitted an amended Protocol II (mines, booby traps, and other devices), as amended on 3 May 1996, 35 I.L.M. 1209 (1996), to the Senate for advice and consent to ratification. See 33 Weekly Comp. Pres. Doc 14 (Jan. 13, 1997).

- The Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-personnel Mines and on their Destruction, among other things, prohibits the use, stockpiling, and transfer of all antipersonnel mines. It also prohibits assisting, encouraging, or inducing anyone else to do so. The United States is not party to and has not signed this treaty. However, many US allies have, and this fact must be considered in planning.
- There are **two international agreements** that bear indirectly on maritime mine warfare.
  - **The Seabed Arms Control Treaty of 1971** prohibits placing any nuclear or other weapons of mass destruction (WMD) on the seabed or subsoil thereof beyond a 12-mile coastal zone. WMD other than nuclear weapons are not defined in this or any other arms control treaty.

## THE HAGUE CONVENTION (VIII) PROVISIONS

The provisions of this convention forbid...

- the laying of unanchored automatic contact mines that do not become harmless within 1 hour after whoever lays them loses control over them and of anchored automatic contact mines that do not become harmless immediately upon breaking free of their mooring
- the mining of enemy waters and ports for the sole purpose of intercepting commercial shipping

Moreover, the convention requires...

- belligerents to do their utmost to render anchored automatic contact mines harmless within a limited time
- when a belligerent can no longer maintain surveillance over such mines, it must notify other governments and ship owners of minefield locations as soon as military conditions permit
- at the close of war, parties to the Convention must do their utmost to remove mines they have laid and report the position of anchored automatic contact mines they laid off the coast of another

Figure I-2. The Hague Convention (VIII) Provisions

•• The **navigation and overflight provisions of the 1982 UN Law of the Sea Convention** reflect customary international law and codify the rights and duties of nations with respect to various uses of the oceans. Mine-laying operations must consider the applicability of this Convention and the rights and freedoms enjoyed by all nations.

b. **US Policy.** US policy on barrier, obstacle, and mine employment is addressed in Army Field Manual (FM) 27-10, "Law of Land Warfare," Naval Warfare Publication (NWP) 3-15.3, "Mining Operations," and

NWP 1-14M/MCWP 5-2.1, "Commander's Handbook on the Law of Naval Operations" (section 7.7 and 9.2). US forces do not use non self-destructing antipersonnel landmines except for demining training and countermine operations in the defense of US and allied forces in the Republic of Korea. US forces fully comply with the Protocol on Prohibition or Restrictions on the Use of Mines, Booby Traps and Other Devices, as amended on 3 May 1996, annexed to the Convention on the Prohibition or Restriction on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects.

## CHAPTER II

### JOINT COMMAND, CONTROL, AND PLANNING

*"The mine issues no official communiqués."*

Admiral William V. Pratt, USN  
(In *Newsweek* magazine, 5 Oct 1942)

#### 1. General

There are no special command and control (C2) arrangements for employing or countering barriers, obstacles, and mines. There are, however, certain factors that should be considered during joint planning.

#### 2. NCA and Chairman of the Joint Chiefs of Staff Guidance

JFCs are subject to definitive US policy and guidance promulgated by the NCA through the Chairman of the Joint Chiefs of Staff (CJCS). The NCA decision making process evaluates the probable effects of strategic barrier, obstacle, and mine warfare employment across the range of military operations.

#### 3. Joint Force

a. **Joint Force Commander.** JFC authority to perform those functions of command that involve organizing, planning, employing, directing, and coordinating are discussed in Joint Pub 0-2, "Unified Action Armed Forces (UNAAF)," and Joint Pub 3-0, "Doctrine for Joint Operations."

b. **Mine Release Authority.** The employment of mines in international waters or foreign territories (including territorial seas) is generally a hostile act, thus requiring NCA authorization. The laying of mines in allied territory or waters is permissible during peacetime with host nation (HN) permission and NCA authorization. The JFC will ensure that employment conforms with both

international law and guidance and policy promulgated by the NCA.

c. **Rules of Engagement.** ROE are directives issued by competent military authority which delineate the circumstance and limitations under which US forces will initiate and/or continue combat engagement with other forces encountered. ROE are generally mission-oriented and action-specific. **ROE promulgated by the geographic combatant commander are based on guidance provided by the NCA** through CJCS Instruction 3121.01, "Standing Rules of Engagement for US Forces." This guidance reflects political, legal, operational, and diplomatic factors that may restrict combat operations. ROE are required throughout the range of military operations to ensure compliance with the laws of war and NCA guidance. **Combatant commander pre- and post-hostility ROE and OPLAN ROE should address authority to emplace barriers, obstacles, and mines**, including scatterable mines and self destructing antipersonnel mines. Following NCA release of these elements for operations, ROE should address their employment by US forces and the prevention, denial, or countering of their employment by the enemy.

#### 4. Coordination

a. **Political.** The US Ambassador to a foreign country is responsible, through the Department of State, to the President for directing and coordinating the activities of US Government personnel in that nation. This authority does not apply to personnel under the command of combatant

commanders whose responsibility is to the NCA. Nevertheless, the combatant commands and appropriate ambassadors' Country Teams are responsible for maintaining close coordination throughout the range of military operations. **This is particularly true for barrier, obstacle, and mine warfare employment before a conflict on the sovereign soil or in national waters of a friendly nation.** The US Ambassador's efforts can be invaluable in gaining a cooperative country's consent to such actions. The combatant commander's political advisor, who serves as the point of contact with the Department of State, may be used as the conduit for these coordination efforts.

b. **Multinational Forces.** US forces may conduct operations within the framework of an **alliance, coalition, or other international arrangement.** The coordination and planning for joint operations is applicable for multinational operations as well. **Planning for land and maritime barrier, obstacle, and mine warfare should be coordinated among multinational forces at all levels.** This will preclude limiting friendly operational maneuver; conflicting, duplicative, or divergent operations; and possible fratricide among multinational forces. Furthermore, information on both friendly and enemy barriers, obstacles, and minefields in the joint operations area must be exchanged in a timely manner, consistent with established security guidelines. Joint force commanders must consider limitations that the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-personnel Mines and on Their Destruction may place on US allies, since many of them may be proscribed from activities associated with mine warfare.

c. **Intertheater.** **Planning will develop locations, communications, and logistic support requirements** for potential strategic and operational barriers, obstacles, and

minefields. **Plans that could impact on other theaters should be coordinated** to prevent potential mutual interference. This is particularly important for maritime mine laying that could affect strategic movement to or from other theaters. Information concerning the locations of enemy-laid maritime minefields that could affect strategic movement must also be exchanged among theaters.

## 5. Planning Considerations

a. **General.** To achieve the maximum effect from an operational barrier, obstacle, or minefield, certain factors must be considered.

- **Barriers, obstacles, and minefields are usually formed around an existing terrain feature** (e.g., mountain chain or a strait) or a manmade structure (e.g., air base, canal, highway, or bridge). Although there is little flexibility in positioning these large-scale obstructions, flexibility exists in selecting and designating those features that will be enhanced or reinforced. Operational barriers, obstacles, and minefields are placed to **manipulate the enemy in such a way that supports the commander's intent and scheme of maneuver** and should be observed and/or covered by fire.
- **The effects that these operational barriers, obstacles, and minefields will have** on both the friendly and enemy forces' ability to maneuver on land and sea or to conduct effective air operations **must be analyzed.** Operational barriers, obstacles, and minefields do more than just degrade the maneuver of enemy forces. Because of their size and the pattern of placement, they virtually dictate the maneuver options of both friendly and enemy forces.

- **The element of surprise is achieved in a different manner** through the employment of operational barriers, obstacles, and minefields. Because of their operational significance, both friendly and enemy forces usually know of their existence and location. **Surprise can result when a barrier, obstacle, or minefield perceived by one force as significant fails to effectively obstruct their opponent.** This implies that the operational significance of a barrier, obstacle, or minefield depends both on its physical obstruction capability and the way in which the opposing forces perceive it. **Joint forces can attain and enhance surprise through the use of rapid employment means** such as air- or artillery-delivered scatterable mines that permit rapid mining anywhere in the operational area. These can confront the attacker with a completely new situation almost instantly. **The use of hard-to-detect employment means such as submarines is another way to achieve surprise.** Surprise can be further gained through the use of lanes and gaps, phony minefields and obstacles, and self-destructing and/or self-deactivating mines. Friendly forces should avoid readily discernible or repetitive employment and utilize deceptive measures. By varying the type, location, and design, the enemy's understanding and breaching of friendly barriers, obstacles, and minefields is made more difficult.

b. **Offensive.** In the offense, the priority of barrier, obstacle, and minefield employment (to include air-delivered scatterable mines) is to canalize or delay the enemy's movements and **enhance and protect the friendly force's ability to maneuver.** This is achieved by controlling the movement of enemy ground and naval forces and degrading the operability of enemy air bases. The enemy's ability to counterattack

or reinforce is restricted and the operational area is isolated. Barriers, obstacles, and mines have **five main objectives in offensive operations** (See Figure II-1).

- **Prevent Enemy Reinforcement or Counterattack.** To prevent the enemy from reinforcing or counterattacking, critical routes are interdicted to hinder movement of reserves and logistics. Speed and depth are vital.
- **Facilitate Economy of Force.** Barriers, obstacles, and minefields allow fewer forces to defend selected sectors, allowing relieved maneuver units and other combat resources to be concentrated in other zones for attack. Similarly, they become a combat multiplier, amplifying the firepower effectiveness of the friendly forces defending them by creating optimum fields of fire. Easily defended chokepoints can be effectively reinforced with obstacles, supported by on-call fire support, and held by relatively small forces.
- **Provide Security.** Barriers, obstacles, and minefields can be used in critical areas along the flanks of advancing forces to restrict enemy attacks. At the operational level, river systems, mountain ranges, deserts, and snow- or ice-covered areas are natural barriers and obstacles that can enhance flank security. Shallows, reefs, and other maritime hazards can be used at sea. Existing barriers and obstacles can be strengthened with reinforcing obstacles and minefields to counter an enemy threat.
- **Degrade Enemy Air Capability.** Mines can pose a significant obstacle to the enemy's ability to recover and resume operations after an air base attack. Any delays can provide friendly forces with

## PLANNING CONSIDERATIONS

### OFFENSIVE

Enhances and protects the friendly force's ability to maneuver

- Prevent enemy reinforcement or counterattack
- Facilitate economy of force
- Provide security
- Degrade enemy air capabilities
- Fix the enemy

### DEFENSIVE

Directed toward degrading the enemy's ability to maneuver

- Integrate systems of barriers, obstacles, minefields, and fires
- Identify reinforcing obstacles and minefields early
- Identify assets to restore the integrity of a barrier, obstacle, or minefield if breached by the enemy
- Create massive obstacles in land operations

Figure II-1. Planning Considerations

an important opportunity to further suppress the enemy's ability to defend against follow-on attacks, leading to the enemy's loss of control of the air.

- **Fix the Enemy.** Air- and artillery-delivered scatterable mines and special operations forces (SOF) emplaced mines can disrupt and delay the enemy's retreat during pursuit and exploitation. They can also be used to disrupt the commitment of the enemy's reserve and follow-up forces.

c. **Defensive.** In the defense, the priority for barrier, obstacle, and minefield emplacement is directed toward **degrading the enemy's ability to maneuver**. A secondary objective is to **destroy or attrit the enemy force**. Other objectives include the support of economy of force measures and the retention of key terrain or areas of significant political, strategic, operational, or tactical value (See Figure II-1).

- **Integrate Systems.** Defensive reinforcement is achieved by integrating



*A main priority in defense is the degradation of enemy ability to maneuver.*

systems of barriers, obstacles, minefields, and fires. The objective is to degrade enemy movement, assist counterattacks, and facilitate future friendly offensive operations.

- **Identify Obstacles and Minefields.** Reinforcing obstacles and minefields are identified as early as possible, because the development of a barrier, obstacle, or minefield system in depth requires time, the commitment of engineer or specialized resources, extensive logistic support, and/or other forces such as overwatching maneuver elements.
- **Identify Assets.** Plans include the identification of assets to restore the integrity of a barrier, obstacle, or minefield if breached by the enemy. This is especially important if the obstruction is critical to operational success.
- **Create Massive Obstacles.** In operations involving land forces, massive obstacle creation should be considered in situations where friendly forces control a major dam on a river. Control of the dam provides the option of limited, controlled flooding or destruction of the dam to create both a destructive flood

surge and flooded areas. However, the effect on friendly maneuver and future operations should be evaluated.

d. **Air-Delivered Scatterable Mines.** The employment of air-delivered scatterable mines **requires close coordination between components** during both the planning and employment phases of the operation. The coordination for the employment of air-delivered scatterable mines is a combined effort of the Joint Targeting Coordination Board (JTCB), the joint force engineer, and the joint force air component commander (JFACC). The JFACC is responsible for planning and delivery of the munition. The planning and integration of minefields into the barrier plan is the responsibility of the joint force engineer. The JTCB is responsible for facilitating joint forces targeting operations by establishing a forum to ensure support and synchronization of JFC objectives as well as integrating and deconflicting all joint force component operations. To ensure a coordinated effort, **a general concept of operations is developed** that includes such issues as identification of objectives, timing, minefield placement, and ingress or egress routes. Coordination must be effected if mines are deployed where friendly ground, SOF, or combat search and rescue forces may be



operating or in locations that lie within the ground force's boundaries. **Once emplaced, the mines remain active until detonated or until the mines self-destruct or self-disarm after a preset period of time.** Required self-destruct or self-disarm times depend upon the operational or tactical situation and are not necessarily related to the proximity of friendly forces. US air-delivered scatterable mines are all designed to self-destruct. Air-delivered scatterable mines are selected when they are the optimum means available to support the JFC's concept of operations.

- Employing air-delivered scatterable mines **requires prior coordination with and approval from the commander within whose boundaries the mines are employed.** Specific coordination procedures should provide an optimum balance between requirements for control and flexibility in execution. In areas close to friendly forces or where friendly forces may operate before the mines self-destruct, **detailed coordination is essential.** Upon approval, the location of employment will be reported by the employing force to the appropriate ground force commander.
  - Air-delivered scatterable mines are **most effective when** combined with other weapons **to delay, disrupt, destroy, or turn enemy forces.** They can complement and extend mine emplacement capabilities and effects beyond the range of land or maritime forces' internal mine-delivery systems. For example, air-delivered scatterable mines can be used to secure flanks of ground units, close breaches in minefields and obstacles, or protect an amphibious objective area (AOA).
  - In early stages of contingency operations or at extended ranges, air-deliverable scatterable mines **may be the only available mining capability.**
  - Minefields employed in direct support of ground forces have **limited effectiveness if unobserved and not covered by some means of fire or fire support.**
  - If air-delivered scatterable mines are the only type of ordnance that will satisfy the ground force commander's requirements, **their use should be specified in the ground force commander's request.** Similarly, if employment of air-delivered scatterable mines in a specified area is not acceptable (i.e., the desired effect) this should also be specified in the ground force plan.
- e. **Denial Considerations.** A denial measure prohibits or restricts the enemy use of space, personnel, supplies, or facilities. Denial operations may include **destruction, removal, or the erection of obstructions.**
- **The combatant commander establishes the theater policies governing denial operations in coordination with allied or friendly governments.** Detailed planning and execution are subsequently delegated to subordinate commanders. In developing denial policies, **consideration must be given to those facilities and areas required to support life in the post-hostility period** regardless of the outcome of the conflict. The long-range social, economic, political, and psychological effects of destruction of civil properties and material must be weighed against the military advantages achieved. The purpose of the law of war toward denial operations is **to ensure that the violence of hostilities is directed toward the enemy's forces** and is not used to cause purposeless, unnecessary human misery and physical destruction.
  - Denial operations usually do not focus upon immediate enemy destruction, but



rather on **contributing to future friendly operations**. Denial operations may have a **major impact on the civilian population**. Denial targets frequently involve civil facilities and structures, such as electrical power generation facilities and ports, and require careful judgment regarding the military importance versus the impact on the civilian population.

f. **Deception.** Deception is defined as those measures designed to mislead the enemy by manipulation, distortion, or falsification of evidence to induce the enemy to react in a manner prejudicial to enemy interests. **There are two basic approaches to deception.** The first is to **increase uncertainty** in order to forestall the enemy's timely reaction. The second is to **misdirect the enemy** toward a line of action that favors friendly operations. **Barriers, obstacles, and minefields can support the aims of both approaches.** Time and enemy surveillance techniques will determine the best method of employing barriers, obstacles, and minefields in support of deception. Allowing the enemy to observe units or vessels engaged or preparing to engage in seemingly realistic employment or breaching operations transmits a specific message to the enemy. Operations must be planned so that their execution will not inadvertently reveal friendly plans. The employment of phony obstacles and minefields are deception techniques. Allowing the enemy access to manipulated or distorted friendly OPLANs that support observations of friendly activity may significantly enhance the believability of the deception.

g. **Political and Psychological.** The primary objective of employing barriers, obstacles, and minefields may be deterrence rather than physical destruction. Accordingly, **political and psychological considerations are key aspects that have far-reaching implications.** From a political perspective,

such measures will signal friendly resolve to take actions required to protect national interests. Psychological deterrence is also achieved. Although the degree of psychological deterrence cannot be quantified, the mere suspicion that mines have been laid can adversely affect enemy planning and operations in excess of the actual threat. The psychological impact of mines can be increased by news-media exposure of their existence and lack of a ready capability to implement countermeasures.

## 6. General Planning Sequence

**Barrier, obstacle, and minefield planning is integrated with operations and fire support planning.** It is integrated with the commander's intent, intelligence preparation of the battlespace, concept of operations, and fire support plans at each level. This provides for the synchronization and focusing of friendly forces' efforts before the plan is passed to the next subordinate level. **Continual coordination between all levels of command ensures the best utilization of natural barriers and obstacles** and minimizes requirements for reinforcing obstacles and minefields.

a. The planning sequence begins with the receipt of a mission or task and ends with the completion of a campaign or major operation.

b. During the **initiation phase**, the JFC may issue a **warning order** to subordinate commanders and allocate barrier, obstacle, and minefield **employment and support tasks** for planning.

c. During the **concept development phase**, the JFC conducts a detailed intelligence analysis of missions, enemy forces, friendly forces, terrain, and time available. From this analysis, **the JFC expresses the overall intent and issues planning guidance.** This guidance normally includes the identification of areas or zones

that require operational-level barriers, obstacles, and/or minefields; critical targets or enemy functions for attack; sequencing of barrier, obstacle, and minefield employment and desired effects; logistic priorities; ROE; and the employment of obstacles and minefields to support denial operations.

d. During the **plan development phase**, the JFC's staff initially **assesses the terrain, weather, and climate** to identify existing operational-level barriers, obstacles, and limits imposed by expected weather. **The need for additional barriers, obstacles, and minefields is identified.** Areas suitable for enhancement and reinforcement are identified. Special attention is given to identifying areas that could be reinforced to form massive area obstacles. The terrain is evaluated from both friendly and enemy perspectives. The evaluation considers the enemy's ability and willingness to cross difficult terrain. Friendly capabilities should not be assumed to be the same as enemy capabilities. Both friendly and enemy perspectives and capabilities are evaluated to estimate options available to each side. The terrain and climate assessments during the initial stage of the plan development phase will enhance the integration of barriers, obstacles, and minefields into the overall plan.

e. Once the JFC's staff has determined what operational barriers and obstacles exist within the operational area, **formulation of the formal barrier and obstacle plan is initiated.** This may include the employment of reinforcing barriers, obstacles, and minefields. Emphasis is placed on **maximizing the effectiveness of existing barriers and obstacles.** Each barrier and obstacle plan requires an estimate of possible or probable enemy actions to identify opportunities for offensive and defensive action. When completed, **the plan should clearly delineate operational barriers, obstacles, and minefields and their**

**intended effect on the campaign or operation.**

- The JFC and JFC staff must **consider the various component weapons systems and delivery assets available** to deliver or emplace the selected reinforcing barriers, obstacles, and minefields. The delivery and/or emplacement assets must be identified and allocated accordingly. The JFC is also responsible for integrating this support into the overall campaign or operation.
- The barrier and obstacle plan formulation should also **identify areas that must remain free of obstacles or minefields to facilitate friendly maneuver.** Such areas are necessary to exploit the advantages gained from enemy reactions and vulnerabilities. At the tactical level in ground operations, this is achieved through the designation of obstacle zones and belts.
- Although sustainment is a Service component responsibility, **the JFC must consider the capabilities, vulnerabilities, and limitations of logistic systems in the planning and execution of the operation.** To achieve flexibility, the JFC must anticipate current and future requirements, the potential for degradation by enemy action, and the ability to sustain operations throughout an entire operation or campaign.
- The barrier, obstacle, and minefield guidance contained in the OPLAN should provide for the **necessary control of obstacle and/or minefield areas and obstacle and/or minefield restricted areas.** It may designate critical obstacles and reserve the execution of selected obstacles. However, restrictions placed on subordinate commanders should be

limited to those deemed necessary by the JFC. At a minimum, guidance should delineate any special reporting, recording, and marking responsibilities.

- The development of the joint campaign or OPLAN necessarily includes **estimates from the component commanders as to how their assets and capabilities can best support the JFC's objectives.**

f. **The JFC reviews and approves the concept of employment for operational barriers, obstacles, and minefields as well as the denial plan.** As part of this approval process, the JFC verifies that the concept of operations meets intent and guidance and facilitates synchronization to produce the most effective employment of operational barriers, obstacles, and mines.

g. Once formal approval of the OPLAN is obtained, **subordinate and supporting commanders develop their own plans.** In doing so, they can determine how existing and reinforcing barriers, obstacles, and minefields will affect maneuver, what conditions are imposed on battle plans, and how to employ supporting obstacles. Although this is addressed as a separate step, subordinate and supporting commanders develop plans concurrently with those of the JFC.

h. The barrier, obstacle, and mine warfare plan is **published**, if required, **as an appendix of an annex to the theater campaign plan, OPLAN, or OPORD.** In addition, the reporting of execution or employment of barriers, obstacles, and minefields should be addressed in OPLAN or OPORD annexes and appendixes (e.g., ROE and in unit standard operation procedures).

i. Although employment is addressed separately in this publication, **planning and employment are a continuous process.** As one operation is executed, the next one is

planned, coordinated, and executed. In addition, **planners must closely monitor execution and be prepared to adapt the plan, and future plans, in response to changing circumstances.** This may involve reapportioning and reallocating assets and reprioritizing support for barrier, obstacle, and minefield emplacement.

j. Plans for the removal or deactivation of mines, barriers, and obstacles may need to be formulated and employed during or after hostilities or other operations.

## 7. Planning Support

a. **Intelligence.** Planning for operations involving barrier, obstacle, and mine warfare requires **timely, continuous, and reliable all-source counterintelligence and intelligence support** (See Figure II-2).

- **Collection, production, and dissemination of intelligence information must start during peacetime.** Tasks include identifying and evaluating worldwide mine-production facilities and storage capabilities (to include on-hand quantities). For each potential operation, analysts must evaluate **types, quantities, and capabilities** of mines, barriers, and obstacles available to the adversary. The evaluation includes technical information on each type of mine (characteristics, description, capability, and vulnerabilities). This information should be posted on Intelink and Intelink-S and disseminated (hardcopy and electronically) to planning staffs.

- **During campaign or operation planning,** Joint Intelligence Preparation of the Battlespace is used to identify enemy mine, barrier, and obstacle storage locations; topographic, hydrographic, and oceanographic information; actual and potential locations for enemy mine,

### INTELLIGENCE SUPPORT TASKS

Tasks include identifying and evaluating...

- worldwide mine-production capabilities and facilities
- types, quantities, and capabilities of mines, barriers, and obstacles available
- technical information on each type of mine (characteristics, description, capability, and vulnerabilities)
- enemy mine, barrier, and obstacle storage locations
- topographic, hydrographic, and oceanographic information
- actual and potential locations for enemy mine, barrier, and obstacle employment
- the enemy's doctrine, tactics, techniques, and procedures for employing mines, barriers, and obstacles
- enemy fire support for mines, barriers, and obstacles (doctrine, capabilities, unit locations)
- enemy breaching capabilities (assets, doctrine, and tactics, techniques, and procedures)
- the enemy's current and future operational capabilities

**Figure II-2. Intelligence Support Tasks**

barrier, and obstacle employment; the adversary's doctrine, tactics, techniques, and procedures for countering and employing them; fire support to support mine, barriers, and obstacles (doctrine, capabilities, unit locations); breaching capabilities (assets, doctrine and tactics, techniques, and procedures); and current and future operational capabilities (See Joint Pub 2-01.3, "Joint Tactics, Techniques, and Procedures for Joint

Intelligence Preparation of the Battlespace"). **Intelligence should provide and update this information to the JFC and staff** in time for the staff to include it in the planning process.

- **Once conflict begins, intelligence collection (including reconnaissance and combat units) must:** locate enemy barrier, mine, and obstacle locations; identify and locate enemy fire support;

identify remaining enemy employment capabilities; and locate enemy breaching assets. This information, particularly any updates, must be pushed down to tactical echelons. Given known enemy doctrine, tactics, techniques, and procedures, intelligence must advise the JFC as to how the enemy will react to friendly operations.

*Doctrine and responsibilities for intelligence support are addressed in JP 2-0, "Joint Doctrine for Intelligence Support to Operations."*

b. **Logistics.** Planning for the use of barriers, obstacles, and mines involves the **acquisition, storage, maintenance, distribution, and security** of the materiel. Logistic planners must be included early in the planning process to ensure proper coordination and timely acquisition of the resources that will be needed to execute the plan.

- **Acquisition and Storage.** Anticipation is key to a sound acquisition and storage plan. Planners must ensure that the proper mix of **mines and minefield, obstacle, and barrier emplacing materials and counterobstacle equipment and materiel** are made available in time to meet the demands of the OPLAN. Requirements at the operational level must be anticipated to prevent delays in delivery of the material to a theater. Unless they are special munitions, the storage of mines will

normally be handled like any other munitions.

- **Distribution.** The execution of this logistic function is crucial to the success of the OPLAN. It helps transform the OPLAN into tactical operations. Logistic planners must ensure the **availability of sufficient resources to transport barrier and/or obstacle material and mines** to the place of employment or deployment.

- **Legal Concerns.** Because the use, possession, transfer, and stockpiling of landmines are highly regulated under various international agreements, international movement and storage of mines must be fully coordinated to avoid legal and political problems.

c. **Communications.** Planning for and employment of barriers, obstacles, and mines require communication and emplacement to facilitate joint and multinational coordination and information flow to inform friendly forces (and, when necessary, civilians) of locations. **These activities require that secure, interoperable command, control, and communications systems are available to support the mission.** This includes developing an architecture and coordinating systems, personnel, automation, frequencies, and cryptographic support. To facilitate interoperability, ensure that the architecture developed is compliant with the standards set forth in Department of Defense Joint Technical Architecture.

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## CHAPTER III EMPLOYMENT

*"Gentlemen, I don't know whether we will make history tomorrow, but we will certainly change geography."*

Sir Herbert Plumer  
(To press conference the day before the  
blowing up of Messines Ridge, 6 June 1917)

### 1. General

The objective of barrier, obstacle, and mine warfare employment is to delay, disrupt, and attrit enemy forces and protect friendly forces. This employment is not an end in itself, but is an adjunct to other military capabilities. This chapter addresses responsibilities and considerations used to canalize, delay, disrupt, and/or attrit the enemy and protect friendly forces relative to employment of barriers, obstacles, and mines in support of land, maritime, and air operations.

### 2. Employment Principles

Employment principles are listed in Figure III-1 and described below:

a. **Barriers, obstacles, and minefields should be evaluated from both an offensive and a defensive posture.** Current doctrine allows the JFC a range of offensive and defensive options. Typically, the option selected will combine elements of static and dynamic types of defense or a combination of defense along one sector and offense in another sector.

b. **Barriers, obstacles, and minefields should directly support the JFC's plan.** They should be carefully matched to the terrain with a maneuver concept that focuses on enemy forces as objectives.

c. **Reinforcing obstacles should be integrated with existing barriers and obstacles to support the JFC's intent and**

**operational concept.** When possible, these reinforcing obstacles are used to close gaps or routes between existing barriers or obstacles. Reinforcing obstacles may also be employed on their own to support tactical objectives. The locations selected for these obstacles should be difficult to bypass, thereby delaying the enemy or requiring the enemy to change plans.

d. **Barriers, obstacles, and minefields are more effective when employed in depth.** A series of simple obstacles is often more effective than one large elaborate obstacle. Any barrier, obstacle, or minefield can be breached if the enemy is willing to expend the time, effort, and resources necessary. When employed in depth, the cumulative effect of successive barriers, obstacles, and/or minefields exposes the enemy to friendly fires and disrupts the enemy's plan of action.

e. **By varying the type, design, and location of reinforcing obstacles, the enemy's breaching operation is made more difficult.** Scatterable mines permit rapid mining anywhere in the battle area, confronting the attacker with a completely new situation almost instantly. **The self-destruct feature of the scatterable mine also provides surprise** by allowing unexpected friendly movement through a recently mined area where mines have just self-destructed. However, the locations of these recently mined areas must be furnished immediately to affected friendly forces, because a very small percentage of mines may not have self-destructed as designed. **Surprise is also**

## EMPLOYMENT PRINCIPLES FOR BARRIERS, OBSTACLES, AND MINES

- ✓ Should be evaluated from both an offensive and a defensive posture
- ✓ Should directly support the JFC's plan
- ✓ Reinforcing obstacles should be integrated with existing barriers and obstacles to support the JFC's intent and operational concept
- ✓ Should be employed in depth (a series of simple obstacles is often more effective than one large elaborate obstacle)
- ✓ Reinforcing obstacles should vary in type, design, and location (makes the enemy's breaching operation more difficult)
- ✓ Barrier, obstacle, and mine employment effectiveness can be affected by the air situation
- ✓ Should provide coverage by observation and, if necessary, by fire

Figure III-1. Employment Principles for Barriers, Obstacles, and Mines

achieved by using phony obstacles that deceive the enemy as to the extent, pattern, and density of the barrier, obstacle, or minefield system. Phony obstacles may produce greater results once the enemy has been sensitized to expect real obstacles and minefields.

f. **The effectiveness of barrier, obstacle, and mine employment can be affected by the air situation.** Forces possessing air superiority may undertake large-scale, time-consuming barrier, obstacle, and/or minefield emplacement and/or countermine operations without extreme security measures. **Forces**

**without air superiority may lose the advantages of concealment and surprise** and either have their barriers, obstacles, and minefields detected and exploited by the enemy or have their breaching operations impeded.

g. **Coverage by observation and by fire is essential** in order to restrict enemy breaching efforts, maneuver, and massing of forces and to increase the destruction of the enemy. Planned on-call fires are ideal for this purpose. Land barriers, obstacles, and minefields not covered by direct or indirect fire provide only minimal delays or diversions,



which may be all that is needed. An example of where minimal delay or diversion would support JFC objectives is the use of air-delivered scatterable mines in an interdiction role.

### 3. Land Operations

Barriers, obstacles, and mine warfare support the theater campaign or major operation by assisting the JFC in accomplishing assigned missions.

a. **Resources.** Most manmade barriers and obstacles are designed to enhance friendly fires or facilitate the maneuver of friendly forces by extending or improving the effectiveness of existing barriers and obstacles. **Predominant resources to support ground operations** are listed in Figure III-2 and described below:

- **Land Mines.** Land mines are categorized as **conventional** or **scatterable**. Both categories provide antitank and antipersonnel capabilities. With the exception of the United States Forces,

Korea, US forces are limited to the use of self-destructing antipersonnel mines.

• **Conventional mines are no longer the most commonly used** and are normally emplaced before the battle begins in friendly terrain to support the main battle area. Many of these mines are activated by pressure or contact. These mines are laid by hand or mechanical means, buried or surface laid, and **normally emplaced in a pattern to aid in recording**. Mechanical laying may be restricted by terrain conditions. The emplacement of conventional minefields is normally time-, manpower-, and logistic-intensive.

• **Scatterable mines are the most commonly used and are emplaced without regard to classical patterns.** Although locations of each individual mine cannot be precisely recorded, scatterable minefields can be accurately recorded to within plus or minus 10 meters when emplaced. They are emplaced by ground mine dispensing systems, artillery, aircraft, or by hand. They are **designed to self-destruct** after a set period of time, ranging from 4 hours to 15 days. **Scatterable mines significantly reduce manpower requirements associated with mine warfare.** Smaller and lighter, these mines offer a reduction in logistic requirements because of their reduced bulk and weight. Scatterable mines also make it possible to **emplace minefields quickly** and, importantly, to do so deep in the enemy's rear area such as at an air base, LOCs, air defense site, or an assembly area. Air-delivered scatterable mines allow **greater flexibility to time-shift the available fixed- and rotary-wing aircraft and artillery** to interdict mobile enemy forces without the weapons system having to acquire enemy forces, as is the case with direct attack munitions. This makes it



Figure III-2. Land Operations Support Resources

possible to interdict enemy forces moving during darkness or poor weather without requiring sophisticated night and/or weather target acquisition capabilities. In certain circumstances, air-delivered scatterable mines also make it possible to **attack enemy units without the delivery aircraft or system being exposed to the enemy's point air defenses**, reducing the need for standoff munitions. These capabilities greatly enhance the ability to delay and confuse enemy forces, thereby creating the opportunity to destroy the enemy with other fires. **The main disadvantage of scatterable mine employment is that the most flexible and responsive means of delivery — aircraft and artillery — have additional and perhaps more critical roles on the battlefield.** Other disadvantages include the time and high number of artillery rounds or aircraft sorties required to emplace a minefield and increased exposure of emplacing artillery to counter battery fires and emplacing aircraft or helicopters to enemy air defenses. Planning scatterable mine obstacles must include detailed integration of the employment method with self-destruct times, observation of

“trigger points,” and counterattack routes. Surface conditions also affect employment; i.e., scatterable mines are especially ineffective on snow cover. Planners must consider the possibility of unduly endangering civilians in the employment of scatterable mines and remain mindful of the commander's legal duty to prevent killing or injuring civilians. All scatterable minefield records are **essential to assist in clearing minefields after the termination of hostilities.**

- **Demolition Obstacles.** **Demolition obstacles are created by the detonation of explosives.** Demolition is generally used to create tactical level obstacles. However, it can also be used to create operational obstacles such as the destruction of major dams, bridges, and railways as well as highways through built-up areas or terrain chokepoints. **Demolition obstacles are classified as preliminary or reserved obstacles.** Operational-level demolition obstacles may require lengthy completion time and large quantities of demolition materials because of the size and characteristics of the target.



*Demolition obstacles can also be used to create operational obstacles such as destruction of bridges.*

• **Preliminary demolition obstacles** are those planned by subordinate commanders, are not considered critical to the JFC's plan, and can be detonated as soon as they are prepared or as the situation dictates.

• **Reserved obstacles** are those deemed critical to the JFC's or subordinate commander's plan and are detonated only when directed by the commander who designated them.

- **Constructed Obstacles.** **Constructed obstacles are manmade, usually without the use of explosives.** Typical tactical examples are barbed wire obstacles and tank ditches. Operational and strategic barriers and obstacles may also be constructed. Examples are fortified areas and lines. These large-scale obstructions generally require extensive time, manpower, equipment, and material. **Constructed barriers and obstacles should be emplaced before hostilities or in areas not subject to observed fires,** because construction personnel can be exposed to all types of enemy fire.

- **Flame Field Expedients (FFE).** When mines, barrier materials, or engineer resources are not available or are in short supply, **the JFC may have to rely on field-expedient flame explosives for employment in place of obstacles and minefields.** FFE can be hastily constructed from materials found on the battlefield, such as containers, fuel, and explosive devices. FFE can provide a quick, effective means for providing a limited offensive and defensive obstacle capability, because the exploding fireballs of flame can stun dismounted troops and degrade armored vehicles.

b. **Offensive Employment.** In the offense the JFC, through the JFC staff, **identifies**

**priority locations and plans and coordinates the joint emplacement of barriers, obstacles, and minefields.** Under some circumstances, the JFC may designate the systems that subordinate commanders utilize for emplacement. These barriers, obstacles, and minefields generally focus on isolating the battlefield, facilitating economy of force, enhancing overall force security, and blocking or delaying an enemy's withdrawal. During planning and deployment, care must be taken to ensure that the mobility of the attacking force is not hindered. **Key factors for consideration in offensive employment are:**

- Current enemy situation, capabilities, intent, and probable courses of action (COAs);
- Accurate terrain analysis to determine where friendly forces are vulnerable to counterattack;
- Preplanning, deconfliction, and coordination with other components;
- C2 of obstacle and mine emplacement; and
- Information flow to inform friendly forces of friendly and enemy barrier, obstacle, and minefield locations using the standard report formats.

c. **Defensive Employment.** As in the offense, the JFC, through the JFC staff, identifies priority locations and plans and coordinates the joint emplacement of barriers, obstacles, and minefields. Under some circumstances, the JFC may designate the systems that subordinate commanders use for emplacement. **The primary intent of defensive barrier, obstacle, and mine warfare employment is to degrade enemy capabilities** by disrupting combat formations and delaying their movement, interfering with C2, and confusing enemy commanders. The

secondary intent is to destroy or attrit enemy forces. **Key factors for consideration in defensive employment are as follows:**

- Current enemy situation, capabilities, intent, and probable COAs.
- Accurate terrain analysis to determine where friendly forces are vulnerable to enemy attack.
- Preplanning, deconfliction, and coordination with other components.
- C2 of obstacle and mine emplacement.
- Information flow to inform friendly forces of friendly and enemy barrier, obstacle, and minefield locations using the standard report formats.
- Barrier, obstacle, and minefield emplacement which must be integrated to complement the plan for defense.
- Conventional minefields and other time- or labor-intensive obstacles that can be emplaced before the beginning of hostilities, reducing the exposure to enemy fire. (This also increases the time available to mass the large amount of supplies needed to construct the barriers, obstacles, and minefields.)
- Preplanned employment of scatterable minefields throughout the battlefield. The choice of scatterable systems is mission-dependent. Ground emplaced mine scattering systems are best for rapidly emplacing large minefields in friendly controlled areas. Artillery or aircraft-delivered systems are employed throughout the battlefield. The appropriateness of artillery or aircraft delivery systems varies depending on the threat conditions and other mission priorities; however, organic systems should be employed whenever possible.

- Analysis of the effects of scatterable mines in the defense with respect to self-destruct times. The timetable for friendly operations may be upset or cause fratricide if the wrong self-destruct settings are used.

- Smoke, used as a limited obstacle to canalize or slow advancing enemy forces. When combined with barriers, obstacles, and/or minefields, smoke can enhance the vulnerability of enemy forces by limiting their visual, target-acquisition, and intelligence-gathering capabilities.

#### **d. Reporting, Recording, and Marking.**

**The immediate reporting of friendly and enemy barriers, obstacles, unexploded ordnance hazards, and minefield locations to higher headquarters is essential.**

Emplacing units are responsible for immediate reporting of each obstacle and minefield, intent (i.e., barrier or obstacle plan), initiation, completion, and recording completion of the obstacle. Positive control and a rapid flow of information on mine emplacement are necessary. Both friendly and enemy minefields are reported and marked because of their lethality to both friendly forces and noncombatants. Records and reports are critical to the immediate conflict and will become vital in facilitating posthostilities clearance. **Reporting, recording, and marking of all minefields must be accomplished in accordance with accepted procedures as listed below.**

- **Reports.** Once emplaced, minefields and unexploded ordnance hazards are lethal and unable to distinguish between friend and foe. For this reason, positive control and a rapid and continuous flow of information is necessary (See the Variable Message Format [VMF] Message Number K05.16, "Land Minefield Laying Report" established in the VMF "TIDP-TE, Volume III, Annex A").

•• **Conventional Minefields.** Three reports are required of tactical units emplacing conventional minefields: **Report of Intention, Report of Initiation, and Report of Completion.** The report formats are listed in Appendix A, “Mine, Countermine, and Obstacle Reports.” These reports are transmitted to the authorizing headquarters. Their contents are integrated with terrain intelligence and disseminated through intelligence channels.

•• **Scatterable Minefields.** The speed and responsiveness of scatterable-mine employment require **accurate, uniform, and timely reports.** All information on scatterable-mine employment is immediately reported by the emplacing unit for dissemination to all affected units. To facilitate reporting and recording, a simple, uniform procedure is used that combines the report and record into one document. This is the **scatterable minefield record and report** listed in Appendix A, “Mine, Countermine, and Obstacle Reports.” It is applicable to all Service delivery systems. In addition, if scatterable mines are to be emplaced within a land force commander’s boundaries, regardless of fire support coordination line placement, the emplacing unit immediately disseminates a **scatterable minefield warning (SCATMINEWARN)** to all potentially affected units. The format for this warning message is listed in Appendix A, “Mine, Countermine, and Obstacle Reports.” Timely warning is essential because of the potential for friendly fratricide and serious degradation of mobility. This warning is given during the planning phase of the operation and followed up with another warning giving the actual location immediately after emplacement.

•• **Enemy Minefields.** As specified in the OPLAN, **any detection, encounter, or knowledge of enemy minefields or mining activities by tactical units is reported to higher headquarters by the fastest means available.** The report format used is listed in Appendix A, “Mine, Countermine, and Obstacle Reports.”

•• **Unexploded Explosive Ordnance (UXO).** Immediate reporting is essential. UXO hazard areas are lethal and unable to distinguish between friend and foe. Positive control and a rapid, continuous flow of information are necessary. **Land forces units send a UXO spot report** (Appendix A, “Mine, Countermine, and Obstacle Reports”) relaying information on a confirmed UXO location and reporting locations where submunition ordnance has been employed. **The UXO Spot Report is a detailed, swift, two-way reporting system** that makes clear where the UXO hazard areas are, what the mission impact is, and who the affected units are. UXO hazard areas are treated as obstacles.

•• **Joint Minelaying Operations (MINEOPS).** The MINEOPS report is used to exchange information between all components and joint headquarters. **It provides the location, characteristics, and status of components’ minelaying operations.** It is also used to request, task, modify, report, plan, and approve minelaying operations, as appropriate. The report format is specified by MIL-STD-6040, “U.S. Message Text Formatting Program,” and listed in Appendix A, “Mine, Countermine, and Obstacle Reports.”

•• **Obstacles Other Than Minefields.** **The sensitive information report is**

**used to provide information on barriers and obstacles (other than minefields) that may have a significant impact on current planning or operations.** This report is used to exchange information between all joint force headquarters and components. The report format is specified by MIL-STD-6040, "U.S. Message Text Formatting Program," and as listed in Appendix A, "Mine, Countermine, and Obstacle Reports."

- **Records.** Minefield records must be prepared and **include all known information required in the specified formats.** The level of information will vary based on friendly versus enemy emplaced minefields and the type of emplacing systems utilized. These records facilitate troop safety, future operations, and clearing operations when the hostilities are concluded.

•• **Conventional Minefields.** As specified in the OPLAN, minefield records are prepared by the emplacing unit for each conventional minefield and forwarded to the appropriate staff proponent designated to maintain the records on file. All conventional minefields, except those emplaced as part of a unit's defensive perimeter, are recorded on Department of Army (DA) Form 1355 (Minefield Record). Those minefields that are part of a unit's defensive perimeter are recorded using DA Form 1355-1-R (Hasty Protective Minefield Record).

•• **Scatterable Minefields.** The record of scatterable minefields is submitted as part of the minefield report, as discussed above.

•• **Retention of Records.** A final repository for both friendly and enemy minefield reports must be designated in

the appropriate OPLAN or OPORD annex or appendix. If a Service component commander is designated as the joint force land component commander, then that commander becomes the command repository for all minefield reports and records. This becomes critical at cessation of hostilities, as the battlefield must be cleared. Clearance may be accomplished by several means: friendly forces, belligerent forces under the auspices of the UN Security Council, contractors, or any combination of these.

- **Marking.** The marking of minefields is accomplished using methods found in standardization agreement (STANAG) 203b, FM 20-32, and joint task force established standing operating procedures.

•• **Conventional minefields and unexploded ordnance hazard areas** are marked as necessary to protect friendly forces and civilians. The fencing of minefields, both friendly and enemy, in friendly controlled areas is required.

•• **Scatterable Minefields.** Minefields are marked as soon as they are employed or discovered to protect friendly troops and noncombatants. Ground-emplaced scatterable minefields are marked by land forces, and require highly accurate positioning or survey data from the emplacing unit. However, it is unrealistic to expect artillery- and aircraft-emplaced minefields to be marked in the same manner as ground-emplaced scatterable mines. **Scatterable minefield marking may be unnecessary or impossible in many cases.** Scatterable mines placed in enemy terrain are a prime example. For this reason, units operating in the vicinity of these scatterable minefields must know the time of emplacement, self-destruction duration period set, and aim point or lateral boundaries of the safety

zones, and must also use extreme caution. The unit that finds the minefield is responsible for marking and reporting it. Immediate warning is essential because of the potential impact on friendly mobility and potential fratricide.

•• **Enemy Minefields.** Minefields are marked and reported immediately when discovered to protect friendly troops and civilians.

## 4. Air Operations

a. **Air-delivered scatterable mines can be used effectively in support of land operations.**

- Air-delivered scatterable mines can be used as part of a **synchronized and integrated plan** to support land requirements.

*Further guidance on air operations in support of land operations may be obtained from JP 3-03, “Doctrine for Joint Interdiction Operations,” and JP 3-09, “Doctrine for Joint Fire Support.”*

- Air-delivered scatterable mines can be used for the **purposes listed in Figure III-3.**
- Air-delivered scatterable mines may be used to **support friendly rear area operations.** They may be used to deny enemy airborne drop zones, air assault landing and pickup zones, or to augment the defenses of friendly facilities and LOCs.
- During the planning phase, coordination is required at the JFC level among the components to **ensure that the use of air-delivered scatterable mines will not negatively impact or restrict current or future ground operations.** The land force commander having the area of

operations in which air-delivered scatterable mines are to be employed is normally responsible for the coordination of their use with the scheme of maneuver to ensure unity of effort.

- During the execution phase, **recording and reporting of air-delivered scatterable mines are essential at all levels of command.** During the execution phase, the component commander tasked with delivering mines from aircraft is responsible to report the specifics of each air emplaced minefield to the JFC and other component commanders. This report provides the approving authority, target description, unit emplacing the mines, method of emplacement, actual (not the planned) location of emplaced mines, date and time of emplacement, self-destruct duration period, aim point or lateral boundaries of the safety zone, unit or title of person submitting the report, remarks, and date and time of the report. **Immediate reporting and warning messages before emplacement are essential.** These reports and warnings are necessary to warn friendly forces and reduce the potential for fratricide and serious degradation of ground force mobility.
- All scatterable minefield records are **essential to assist in clearing minefields after the termination of hostilities.**

b. Air-delivered scatterable mines can be used effectively for **counterair missions**, such as airfield attacks, suppression of enemy air defenses (SEAD), and theater missile defense (TMD) attack operations.

- **An objective of an attack on an enemy airfield is to delay or disrupt movements from that base.** Air-delivered scatterable mines will extend the effect of the air attack by restricting



## AIR-DELIVERED SCATTERABLE MINES

Air-delivered scatterable mines can be used to...

- disrupt and destroy enemy unit concentrations (including armored units)
- disrupt enemy field artillery (including surface-to-surface missiles) and air defense systems movement and resupply
- disrupt enemy helicopter forward operating bases as well as fixed- and rotary-wing airfields
- disrupt counterattacks and other enemy operations
- protect the flanks of friendly exploiting forces
- disrupt enemy logistic support
- close breached friendly minefields or other obstacles
- disrupt enemy river crossing operations, coastal landings, and beachhead operations

Figure III-3. Air-Delivered Scatterable Mines

ground movements on the base. The initial impact will be to either stop or slow aircraft movement until the taxiways and runways are cleared or else force the enemy to risk aircraft damage by encountering the mines. Air-delivered scatterable mines are also effective in preventing or delaying repairs on the damaged portions of the airfield.

- Similarly, **the use of air-delivered scatterable mines during SEAD**

**attacks will delay the repair and return to operational status by elements of enemy air defense systems.** Actual destruction of entire portions of air defense systems may be difficult because of system redundancy and dispersed equipment. Use of mines will restrict access to those undestroyed portions of the system after an attack and prolong the loss of use of those portions destroyed and damaged. Mines will also cause repair personnel to expose themselves to



additional attacks and risk essential electronic test and repair personnel and equipment.

- **Air-delivered scatterable mines can also contribute to TMD operations.** Such munitions can deny enemy forces access to preferred launch areas, inhibit movement, damage missile transporter, erector, and launchers, and curtail reload operations.

c. **Interdiction attacks** may include the employment of air-delivered scatterable mines. Scatterable mines not only delay repairs to interdiction targets, but also will damage any vehicles or personnel that attempt to use or transit the interdiction target area. Mines can deny and delay access to storage and manufacturing facilities, holding areas, transshipment points, and power generating and transmission stations. Typically, **the major damage on interdiction targets will come from weapons with an immediate effect.** However, mixing even a few mines with other munitions will create uncertainty and fear among the repair crews or users of the target areas.

## 5. Maritime Operations

**The NCA has tasked the Commander in Chief, US Atlantic Command (USCINACOM), Commander in Chief, US Central Command, Commander in Chief, US Pacific Command (USCINCPAC), Commander in Chief, US Southern Command, and the US Commander in Chief, Europe with the responsibility for the conduct of maritime mine warfare within their areas of responsibility** and in support of other combatant commanders' maritime mine warfare requirements. These commanders have delegated the responsibility for planning maritime mine warfare operations to their Navy component commanders. The Navy

component commander's mine warfare plan is integrated with the geographic combatant commander's concept of operations. The geographic combatant commander's intent and planning guidance provide direction on such matters as operational sequencing, critical targets, desired effects, priorities, and limitations. Using this information, the Navy component commander determines how best to use available assets and develops appropriate COAs to support the theater plan. When approved by the geographic combatant commander, the maritime mine warfare plan is implemented.

a. **Planning.** Navy component commanders have three ways in which to execute minefield planning. If time constraints are critical, Navy component staffs may conduct **planning for quick-reaction minefields.** If the **minefield plan** has been developed in advance and is appropriate for tasking, it may be used. If sufficient time is available, a **minefield plan may be developed to meet a specific need.**

- **Minefield plans are developed for specific fields by the Navy's Commander, Mine Warfare Command (COMINEWARCOM),** in response to Navy component commander tasking. COMINEWARCOM planners work with the tasking commander to formulate mining scenarios consistent with OPLANs and intelligence estimates of anticipated enemy traffic and reaction capabilities. **For each intended minefield, a detailed design is prepared** for specified primary and secondary targets, using standardized formats, and submitted to the tasking commander for approval. Upon acceptance, all necessary documentation is assembled into a numbered **minefield planning folder (MFPP)** that is distributed to fleet users to be maintained for future implementation.

- **Once an MFPP is created, COMINWARCOM continually evaluates and updates the plan as necessary.** Individual MFPPs include minefield plans, mine requirements, and mine settings. These MFPPs provide a definitive basis for inventory planning, stockpile pre-positioning, and logistic support capabilities. In the event of hostilities, the preplanned minefields can be executed without further planning.

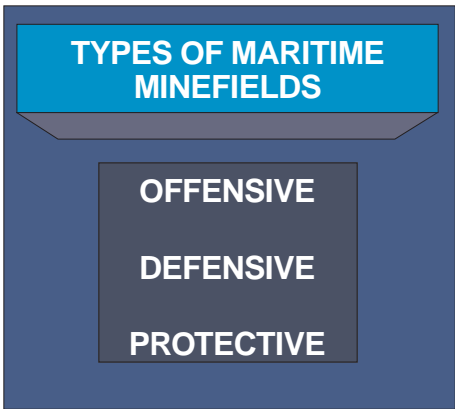
**b. Objective.** The aim of maritime mining is, in conjunction with other maritime and air assets, **control of the sea. Mining can be used at all levels of war and across the range of military operations to achieve the objectives of friendly forces.** Mining can delay and attrit enemy maritime forces and can deny them the unrestricted use of sea areas of passage. Barriers, obstacles, and minefields can also protect friendly harbors, channels, and seaways, as well as shorelines susceptible to enemy amphibious operations. For planning purposes, the minefield rather than the mine should be regarded as the weapon. **The basic types of minefields are characterized as offensive, defensive, or protective** (See Figure III-4).

- **Offensive Mining.** Offensive minefields, which include strategic fields, are those **planted in enemy-controlled**



*Offensive minefields are laid by aircraft or submarines because of their close proximity to the enemy.*

**waters.** These minefields pose the most direct threat to the enemy and, when completed, pose little threat to friendly forces. Offensive minefields are laid by aircraft or submarines because these minefields are usually in close proximity to the enemy. Offensive and strategic minefields consist of mines that have the most countermeasure resistance to complicate the enemy's mine countermeasures (MCM) problem. The use of phony mines or mine-like objects within a field can help this aim. Strategic minefields are long-term fields laid to deny enemy use of sea routes required to support and execute the enemy war effort. Strategic fields should be laid as soon as possible after commencement of hostilities and should be as heavily mined as assets permit, because replenishment may be extremely difficult.



**Figure III-4. Types of Maritime Minefields**

- **Defensive Mining.** Defensive minefields are those **employed in contested waters to intercept the transit of enemy combatant forces.** Because of defensive minefield locations, employment planning must consider neutral and friendly force transits in addition to those of the enemy. Minefield lanes may be planned to facilitate friendly force passage, but keep in mind that the same waters may be mined by enemy forces as well. For these reasons, defensive minefields should be laid with the utmost navigational accuracy.

- **Protective Mining.** Protective minefields are those **employed in friendly waters to protect friendly ports, harbors, or inshore SLOCs.** Protective minefields are the easiest to plan and lay and can use almost any type of maritime mine. Navigational accuracy for laying the field is vital because friendly forces will use the transit channels on a regular basis. Protective fields require that all users, including neutrals, be aware of or be led through the safe routes.

#### c. Resources

- **Sea Mines.** The sea mine is essentially **an explosive charge in a casing that is laid underwater to destroy ships.** Mines can be positioned on the seabed, moored at a predetermined case depth, or floated. The bottom mine is laid on the seabed and held in place by its own weight. The **moored sea mine** has a buoyant case and is held in place at a predetermined depth by an anchor. **Floating sea mines** are not held in place and are subject to tides, currents, and winds. Their use represents, in most situations, a violation of international law. Therefore, US doctrine does not provide for employment of floating mines. **The three methods of activating mines are**

**contact, influence, and controlled.** Contact mines must be hit by a ship or submarine to be activated. Influence mines are activated by the acoustic, magnetic, seismic, electric potential, or pressure influences (singularly or in combination) from a ship or submarine. Controlled mines are activated from a remote control station when the target is within range.

- **Allocation.** Mines to support the mining plans are **allocated to the Navy component commanders**, who in turn prescribe which mines go to specific stockpiling sites. If the capacities of stockpile sites are insufficient, the residual mines are stocked in the continental United States. The Chief of Naval Operations has designated **COMINEWARCOM** as the mine warfare technical advisor to the Navy component commanders. COMINEWARCOM maintains and monitors the mine stockpile and makes recommendations concerning readiness. When directed, the stored mines are assembled and prepared for laying.

d. **US Air Force (USAF) Maritime Mining Support.** **USAF aircraft may be employed for maritime mining. Requirements are developed during the deliberate planning process.** Upon conflict initiation, a geographic combatant commander requiring USAF support above that available through the Air Force component commander will direct the request through the Chairman of the Joint Chiefs of Staff to the NCA. After approving the request, the NCA will task a geographic combatant commander to provide appropriate forces to the requesting combatant commander. **Command relationships over the transferred forces will be as specified in the establishing directive.** The JFC will apportion sorties to the mining role as required to support the concept of operations. Planning

support for mining missions will be coordinated by the supporting combatant commander with the theater planning staff, USAF and Navy component commanders, and COMINELWARCOM. Logistic support is provided in accordance with joint mining agreements between the US Air Force, US Navy, and the combatant commanders.

e. **Operations.** A **minelaying operation** consists of planning the minefield, preparing the material and personnel to conduct the laying, planning the laying mission, laying the mines, conducting follow-on surveillance and, if required, replenishing the minefield. The numbered fleet commanders **coordinate mission planning** and **conduct mining operations** as directed by the Navy component commander or JFC. COMINELWARCOM provides assistance to the numbered fleet commanders by providing planning, technical, and mine maintenance support personnel as required.

- **Platform Advantages and Disadvantages.**

Aircraft, submarines, and ships are all capable of laying mines if properly equipped. Although US doctrine does not provide for US surface ship laying of mines, many allied surface ships possess this capability.

- **Almost any aircraft capable of carrying bombs can carry sea mines.**

The advantages of using aircraft are speed, flexibility, range, invulnerability to enemy mines, and the ability to lay mines in all water depths. Disadvantages include less accurate mine laying and vulnerability to enemy surface and air defenses. This vulnerability requires dedicated air combat and enemy suppression assets to support mine-laying mission ingress or egress. Loss of surprise resulting from overt mine delivery may also be a disadvantage. However, this should be weighed against the immediate and powerful

psychological impact that such an operation would be likely to produce.

- **Submarines have the advantages of being able to conduct covert mining.**

Disadvantages include limited mine capacity, vulnerability to enemy mines, and the inability to operate in relatively shallow water.

- **Surface ships have the advantages of long-range, large mine capacity, and accuracy in laying.**

Disadvantages are slow movement and vulnerability to enemy reaction. No surface ship in the US Navy is currently equipped to lay mines.

- **Mine and Minelayer Availability.** The criteria for selecting the platform for a mining operation are **probability of mission success**, the **importance of time**, **availability**, and **expected casualty rate**. If heavy enemy opposition is expected, the use of submarine or aircraft layers might be indicated. Distance from mine storage to loading area and numbers and types of mines required must also be considered. All these factors will influence the ability to meet operational time lines and will determine the number of laying platforms required.

- **Escort Requirements.** The **expected enemy reaction to the laying of a minefield**, and the **platforms to be used**, will determine whether a **covering force will be required**. The covert laying of a field in an area out of immediate enemy defense range may not require cover. However, the laying of minefields by aircraft or ship in all but friendly waters will, in most cases, require protective covering forces. As a result, in addition to the usual minelaying requirements, covering force requirements must be addressed.

- **Replenishment and Neutralization Requirements.** Consideration must be given to the length of time a minefield is required to remain effective. Enemy MCM or natural causes may reduce mine life expectancy and necessitate replenishment of the minefield. Conversely, operational needs may require the passage of friendly forces through a mined area at a given point in time. In this case, the mines may be set to neutralize themselves at a specific time to permit the passage.
- **Recording and Reporting Requirements.** Air-delivered minefield records are essential to assist in clearing

minefields after the termination of hostilities. For joint US missions, the **Joint MINEOPS report is used to exchange information between all components and joint headquarters.** It provides the location, characteristics, and status of component minelaying operations. It is also used to request, task, modify, report, plan, and approve minelaying operations, as appropriate. The report format is specified by MIL-STD-6040, "U.S. Message Text Formatting Program" (See Appendix A, "Mine, Countermine, and Obstacle Reports"). NWP 1-03.1, "Operational Reports," may be consulted for more specific information on required reports.

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## CHAPTER IV

### COUNTERING ENEMY EMPLOYMENT

*"My first reaction was to notify someone else that we had struck a mine. We had to keep the ship from sinking. Another immediate reaction was that this was what we had been preparing for months. I had total confidence that my crew would do the right thing — that they would do what they had been trained to do."*

**Commanding Officer, USS Princeton**  
(On striking an Iraqi mine in the Persian Gulf, 18 Feb 1991)

#### 1. General

Enemy use of barriers, obstacles, and mines can affect the timing and strength of friendly operations. Success in countering enemy efforts is attained when friendly forces can maneuver with minimal damage or delay to reach the original objective beyond the obstruction. This chapter provides information and guidance on countering enemy barrier, obstacle, and mine employment in land and maritime environments.

#### 2. Land Operations

a. **General.** Successful land operations depend on the freedom to maneuver. Terrain conditions, enemy tactics, integrated fires, barriers, obstacles, and minefields can limit friendly maneuver capability. **Successful enemy operations use fire, existing terrain, manmade obstacles, and minefields to restrict friendly freedom of maneuver.** To counter this, friendly forces must be able to gain positional advantage and mass combat power at a critical time and place and to overcome any natural or manmade barriers, obstacles, and minefields.

b. **Resources.** Operations to counter the use of natural and manmade barriers, obstacles, and minefields by enemy forces may involve the **employment of conventional, airmobile, airdropped, amphibious, or special operations forces.**

These operations are normally supported by combat engineer forces. Military advisory personnel or US units may also be employed to assist a friendly nation to counter mines and booby traps or to enhance the mobility of HN forces. Specialized reduction assets include mine detection equipment; explosive devices and line charges; tank-mounted rollers, rakes, and plows; combat engineer vehicles; and various types of rafts and bridges for dry or wet gaps.

#### c. Planning and Operational Support

- **Intelligence.** Operational success in countering enemy use of barriers, obstacles, and minefields depends largely on the ability of the JFC to "see" the operational area. **Intelligence-collection plans identify specifically tasked priority intelligence requirements (PIR).** In any operation where enemy barriers, obstacles, and minefields can interfere with friendly maneuver, information about them or areas expected to contain them become PIR.

- **Intelligence collection by national and theater reconnaissance and surveillance** assets becomes the foundation for developing an analysis of the enemy's probable employment of barrier, obstacle, and minefield systems and fortifications. This information can verify enemy intentions, plans, and defensive strength and identify the mine

types and fuses the enemy has employed. The timely availability of national and theater reconnaissance and surveillance will help the commander determine the best mix of reduction or clearing techniques, forces, and equipment that offer the best chances for success.

• **Obtaining intelligence on the enemy's use of barriers, obstacles, and minefields** requires all available collection assets, ranging from national collection assets down to tactical unit information that locates and identifies fortifications and obstacle emplacements. When operations commence, intelligence is continually verified and updated from actual barrier, obstacle, and minefield encounters.

- **Deception. Deception is an important element in the successful reduction or bypassing of enemy barriers, obstacles, and minefields.** The use of feints and raids, manipulation of electronic signals, use of dummy equipment, staging of engineer equipment, and the employment of other operations security measures will afford the breaching forces an added measure

of security and enhance the probability of surprise. However, deception plans must be consistent with the theater deception themes.

- **Logistics.** Any operations to counter the enemy's use of barriers, obstacles, and minefields may result in equipment damage or loss. **Logistic support must be provided** for the replacement of tactical bridging, combat engineer equipment, line charges and explosives, lane-marking materials, and any other materials to conduct and maintain breaching operations. In addition, **stocks of artillery delivered and air-delivered scatterable mines must be maintained** to counter enemy attacks during friendly breaching operations. Logistic support must occur swiftly and not delay the continuing movement of forces or critical supplies. These conditions must be thoroughly anticipated in the planning phase.

#### d. Planning Considerations

- **General.** The JFC is concerned with identifying large scale natural and manmade barriers, obstacles, and



*Logistic planning must provide for replacement of special equipment and materials to support breaching operations.*



## DESERT STORM BREACHING OPERATIONS

Coalition ground forces south of Kuwait faced a series of formidable defensive positions that the Iraqis had built during the five months before Operation DESERT STORM. Coalition air power was used in several ways to help disrupt these defenses. B-52s bombed the minefields with 750-lb M-117 and 500-lb MK-82 bombs; MC-130s dropped 15,000-lb BLU-82 bombs to create over-pressure and detonate mines. A few days before G-day, USMC AV-8Bs dropped napalm on the Iraqi forces trenches and also were used against minefields. F-117s dropped 500-lb LGBs on oil pipes and distribution points in the fire trenches. In addition to this extensive bombing to reduce the size of the Iraqi minefields and obstacles, most ground units used their organic countermine and counterobstacle equipment to breach enemy minefields and obstacles.

**SOURCE:** Final Report to Congress  
Conduct of the Persian Gulf War, 1992

minefields that provide the enemy with a distinct operational advantage.

•• **Breaching major barriers, obstacles, and minefields requires long-range planning well in advance of encountering the obstruction.** An early decision on logistic support requirements is important to ensure availability of special equipment and material.

•• Major barriers, obstacles, and minefield systems can require a **significant expenditure of time if they are to be reduced.** Whenever it is operationally sound, barriers, obstacles, and minefields should be bypassed.

•• Continual emphasis is placed on **early detection and reporting** of barriers, obstacles, and minefields. It is also important to determine the **type and quality of mines employed** to ensure that suitable countermine measures are employed.

•• Successful breaching operations require the conduct of **special training and rehearsals.**

•• **Suppress, obscure, secure, and reduce are the breaching fundamentals that must be applied** to ensure success when breaching against a defending enemy (See Figure IV-1). **Suppression** is the focus of all available fires on enemy personnel, weapons, or equipment to prevent effective fires on friendly breaching, assault, and support forces. **Obscuration** hampers enemy observation and target acquisition and conceals friendly activities and movement. Friendly forces secure the breaching site to prevent the enemy from

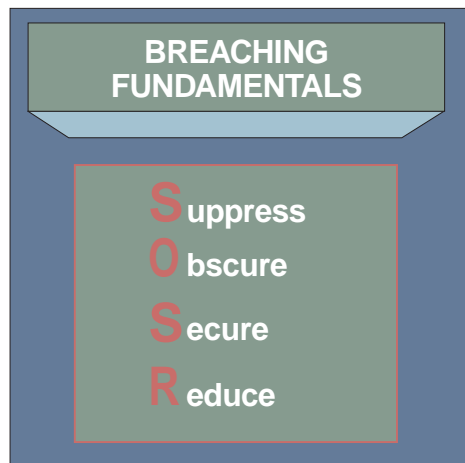


Figure IV-1. Breaching Fundamentals

interfering with the breaching and passage of the assault force through the lanes created. **Reduction** means creating lanes through or over the obstruction to allow the attacking force to pass.

- **The JFC may designate the selection of breaching zones** for major barriers, obstacles, and minefield systems. This designation is based upon defensibility, ability to maneuver and deploy the force, and capability to continue the operation.

- **Operational vulnerability may be reduced** through crossing on a wide front (limited only by the terrain and quantities of reduction assets available), crossing in as many places as possible, crossing by night or in poor visibility or using obscurants, and employing a deception plan.

- **Offensive Planning Considerations**

- **Continuous intelligence collection is required** to verify and update the assessments provided by prior intelligence.

- **Early identification of enemy and natural obstructions** may allow the JFC to avoid or minimize the number and severity of enemy barriers, obstacles, and minefield systems and to limit the number of friendly casualties.

- **Emphasis is placed on maintaining the momentum of the attack through freedom of movement and maneuver.** The obstruction is seldom the objective but normally is an impediment to securing the true operational objective. **Maintaining momentum requires the attacking force to quickly pass through or around barriers, obstacles, and minefields.** Emphasis is placed on the

capture of major roads, bridges, passes, and other terrain features essential for mobility to enhance future operations.

- **Advance planning is necessary** to coordinate the transfer of information concerning barriers, obstacles, and minefields to follow-on engineer units as they are reduced. This planning is necessary to widen and mark assault force breaches and to clear and mark additional routes for follow-on forces.

- **Planning must also address clearing and reduction operations** of friendly and enemy barriers, obstacles, and minefields to allow movement of combat support and combat service support elements.

- **Successful breaching of enemy barriers, obstacles, and minefields requires special planning and support.**

When possible, the breach will be made as a continuation of the attack, using multiple lanes, across a broad front to reduce congestion and vulnerability. However, the availability of reduction assets, crossing sites, and combat power may dictate crossing on a narrow front. If a deliberate breach is required, an early decision is mandatory to obtain the necessary logistic support and concentration of combat power. **Plans should anticipate the need to breach enemy barriers, obstacles, and minefields employed in depth.** Deceptive and covering smoke provide an added measure of security while breaching by denying intelligence to the enemy concerning where the breach will occur and by impeding enemy target acquisition.

- **Logistic support** must facilitate both the continuation of the offense and the transition to the defense, if necessary.

- **Defensive Planning Considerations.** In the defense, **friendly counterattacks and spoiling attacks must not be impeded by barriers and obstacles** throughout the defensive area. Planning must take into consideration the need to maintain freedom of movement and maneuver of friendly forces.

- **Military Operations Other Than War.** In other military operations forces will be impeded by barriers, mines, and obstacles that are often controlled by several different factions.

- **Advance planning and coordination must be done with former warring factions (FWF)** to obtain detailed information on known obstacles and mines. In addition, friendly forces also must coordinate movement and clearing operations with representatives from these factions.

- **Planning must take into consideration the tremendous amount of time involved** in deliberate clearing of large mined areas and the accuracy of marking, recording, and disseminating minefield data.

e. **Planning Sequence.** The planning sequence begins with **JFC's detailed analysis of missions, forces available, terrain, enemy forces, and time.** Emphasis is placed on the integration of barrier, obstacle, and minefield planning with the development of OPLANs.

- Portions of the battlespace containing natural operational level barriers and obstacles suitable for reinforcement by the enemy are identified through **terrain analysis.**
- The terrain should be evaluated from both friendly and enemy perspectives. The results of the **terrain analysis** are

integrated into the development of the concept of operations.

- The **early analysis of operational barriers and obstacles** includes estimates from the component commanders on how best to support the JFC's concept of operations.
- The JFC issues **planning guidance** for countering enemy barriers, obstacles, and minefields. The guidance may include priority of engineer support, fire support, logistic support, C2 measures, and sequencing of breaching operations. Guidance provides the focus for intelligence and targeting and forms the basis for staff estimates and the development of COAs.
- During plan formulation, emphasis is placed on **minimizing the effectiveness of existing enemy barriers, obstacles, and minefields.** Emphasis is also placed on maximizing opportunities to achieve a bypass or an in-stride breach. For each barrier, obstacle, and minefield, a determination is made of the possible or probable enemy actions when they are encountered. This will assist in identifying friendly options for offensive action.
- Once the JFC plan is approved, **supporting and subordinate commanders finalize their plans.**

### f. Operations

- **Employment. Breaching a major barrier, obstacle, or minefield is a difficult and risky task.** Forces must execute breaching aggressively. Forces and supporting fires are synchronized to minimize losses and enhance rapid passage through the obstruction. Breaching operations are summarized in Figure IV-2 and described below.

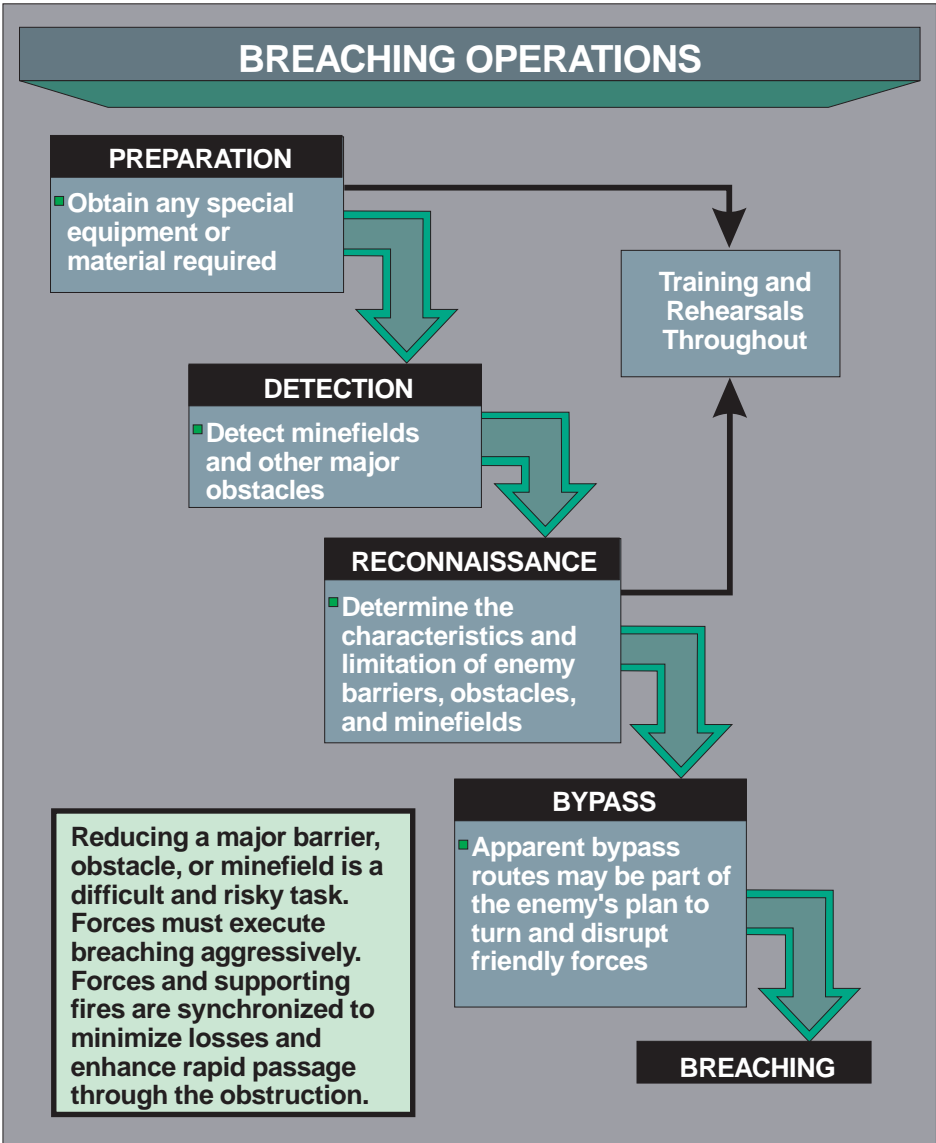


Figure IV-2. Breaching Operations

•• **Preparation.** Before a major counterobstacle operation, units will require **training** and **rehearsals** in counterobstacle operations. Breaching operations require special equipment and material that may require time to obtain and prepare for employment.

•• **Detection.** Efforts must be made to **detect minefields and other major**

**obstacles** using all available means. Common indicators include mines, minefield markers, locations of enemy defensive positions, evidence of terrain modification, major natural obstacles, and other manmade obstacles.

•• **Reconnaissance.** After detection, the **characteristics and limitation** of enemy barriers, obstacles, and minefields **must**

be **determined** using both ground and aerial reconnaissance and remote imagery.

•• **Bypass.** Although bypass is an attractive option, **apparent bypass routes** around major obstacles and minefields **may be part of the enemy's plan** to turn and disrupt friendly forces.

•• **Breaching.** When the JFC decides that it is necessary to reduce a major obstacle or minefield, a combined arms **in-stride, deliberate, assault, or clandestine** breaching operation may be directed. (1) **In-Stride Breaching.** In-stride breaching is a very rapid technique using standard actions on contact and normal movement techniques. It consists of preplanned, well-trained, and well-rehearsed breaching actions and reduction procedures by pre-designated combined arms elements. The in-stride breach takes advantage of surprise and initiative to get through the obstruction with minimal loss of momentum. It maintains the momentum of the attack by denying the enemy time to mass forces to cover the obstacle or minefield. A JFC conducts an in-stride breach against a weak defender; lightly defended or very simple barriers, obstacles, and minefields; or when an unclear situation makes it necessary for subordinate units to be capable of independent breaching operations to accomplish the mission. When conducting an in-stride breach, the commander uses all the resources at hand to maintain momentum through the obstacle and to the objective. (2) **Deliberate Breaching.** Deliberate breaching is a scheme of maneuver specifically designed to cross a heavily defended, extensive, or complex enemy barrier, obstacle, or minefield to continue the mission. A deliberate breaching operation may be required if an in-stride breach is not feasible or has failed.

Deliberate breaching operations are characterized by thorough reconnaissance, detailed planning, extensive preparation, and explicit rehearsal. C2, timing, and deception are critical. (3) **Assault Breaching.** Assault breaching is specifically designed to penetrate an enemy's protective barriers, obstacles, and minefields and destroy the defender in detail. (4) **Clandestine Breaching.** Clandestine breaching is used by dismounted forces during limited visibility. It is silently executed to achieve surprise and minimize casualties. It relies on stealth, manual reduction, and dismounted maneuver.

• **Recording and Reporting.** Any knowledge, detection, or encounter of enemy barriers, obstacles, or minefields is **reported immediately through appropriate channels** and incorporated in intelligence data.

•• **Spot reports** provide the tactical commander the initial source of barrier, obstacle, and minefield intelligence. This information is reported to higher headquarters by the fastest means available.

•• As specified in the OPLAN, **detailed information on enemy minefields is transmitted to the appropriate Service component or joint force headquarters**, where they are maintained on file. The format used for this information is listed in Appendix A, "Mine, Countermine, and Obstacle Reports."

•• **The Joint Mine Countermeasures Operations (MCMOPS) report is used to exchange tactical information between all components and joint headquarters.** It provides the location and status of component MCMOPS, including breaching and clearing. It is also used to request, task, plan, report,

modify, and approve MCMOPS, as appropriate. The report format is specified in MIL-STD-6040, "U.S. Message Text Formatting Program," and listed in Appendix A, "Mine, Countermine, and Obstacle Reports."

- **Marking.** Marking is necessary to **define the limits** of the breached path, lane, or gap and, eventually, the boundaries of the mined area. **Proper marking is critical** to the safe and swift movement of units and to protect friendly forces and civilians.

- **Minefield Clearing.** Minefield clearing is the **total elimination or neutralization** of mines from a defined area.

- Breaching operations are usually conducted under enemy fires. However, **clearing operations are not generally conducted under fire.**

- **A limited clearing operation can be conducted by follow-on engineers and explosive ordnance disposal (EOD) detachments** after the force conducting the breaching operation has reduced the minefield and secured the area. It may also be tasked to eliminate all mines in a minefield previously identified, reported, and marked in a friendly area of operations that hinders mobility or is a hazard to friendly forces or civilians.

- Before clearing operations commence, both **theater records** of friendly, enemy, and FWF minefields installed in the area **and appropriate intelligence reports should be provided to the clearing unit**, to include locations of suspected minefields.

- **Minefields suspected of containing chemical mines are marked and bypassed, if possible.** All use or

suspected use of chemical mines, whether enemy or friendly, must be reported as a suspected violation of international law and the law of war.

- **Deliberate clearing operations should be conducted during daylight hours** when dealing with uncertain areas. Friendly forces should treat areas they have cleared as not suspect.

- **Post-hostilities clearing operations in non-US emplaced minefields are not conducted by US units.** US units clear mines only as required for military operations. Clearance after cessation of hostilities may be provided by other friendly forces, belligerent forces under the auspices of the UN Security Council, civilian contract workers, forces from the country concerned, or a combination of any of these. US forces may provide technical advice, training, and other assistance, as appropriate.

### 3. Maritime Mine Countermeasures

**Maritime MCM include all actions undertaken to prevent enemy mines from altering friendly forces' maritime plans or operations.** MCM reduce the threat and effects of enemy-laid sea mines on friendly naval force and seaborne logistic force access to and transit of selected waterways.

- a. **General.** **MCM are divided into two broad areas:** proactive and enabling MCM (See Figure IV-3).

- **Proactive MCM.** The most effective means of countering a mine threat is to prevent the laying of mines. **Proactive MCM destroy enemy mine manufacturing and storage facilities or mine laying platforms before the mines are laid.** Although an adjunct of mine warfare, proactive MCMOPS are

## MARITIME MINE COUNTERMEASURES

### PROACTIVE

Prevent the laying of mines through...

- destroying enemy mine manufacturing facilities
- destroying enemy mine storage facilities
- destroying enemy mine laying platforms

### ENABLING

Counter mines once they have been laid through...

#### Passive mine countermeasures

- localization of threat utilizing Q-routes
- Detection and avoidance of minefields
- risk reduction

#### Active mine countermeasures

- minehunting
- minesweeping

Figure IV-3. Maritime Mine Countermeasures

not normally conducted by mine warfare forces. Therefore, staff MCM planners must ensure that enemy mine layer, mine storage and, ultimately, mine production facilities and assets are considered for inclusion on joint target lists.

- **Enabling MCM. Enabling countermeasures are designed to counter mines once they have been laid.** Some enabling MCMOPS are undertaken following the termination of conflict solely to eliminate or reduce the threat to shipping posed by residual sea mines. However, most enabling MCMOPS are undertaken during conflict to permit (enable) other maritime operations, such as power projection, to be conducted. **Enabling MCM includes passive and active MCM.**

•• **Passive MCM reduce the threat from emplaced mines without physically attacking the mine itself.** Three primary passive measures are

practiced: localization of the threat, detection and avoidance of the minefield, and risk reduction. (1) **Localization of the threat** involves the establishment of a system of transit routes, referred to as Q-routes, which will be used by all ships in order to minimize exposure in potentially mined waters. Establishment of transit routes should be one of the first steps taken by MCM planners, if the routes have not been previously designated, to minimize exposure of shipping and permit concentration of active MCM efforts. (2) **Detection and avoidance of minefields** can be accomplished by employing intelligence information or organic MCM forces. When the location has been established, shipping may be routed around the area. (3) **Risk reduction** is primarily practiced by individual ships rather than planned and executed by MCM forces. Risk may be reduced by controlling the degree of potential interaction with a mine sensor. Against contact mines, a reduction in





*A primary method of protecting shipping from enemy mines is in detection and avoidance of minefields.*

draft and posting additional lookouts can reduce the number of mines with which the ship's hull might make contact. Influence mines can be denied the required activation signals by controlling the ship's emissions. Using built-in magnetic field reduction equipment, silencing a ship to minimize radiated noise, or using minimum speeds to reduce the pressure signature of a ship are examples of operational risk reduction. Other types of risk reduction involve the enhancement of ship survivability in the event of mine detonation. Such measures can involve increased structural integrity and improved damage-control capability.

**•• Active MCM are applied when passive measures alone cannot protect traffic.** This entails physical interference with the explosive functioning of the mine or actually destroying it. **Minehunting and minesweeping are the primary techniques employed in active MCM.** Both require detailed intelligence and extensive planning by the MCM commander to counter the threat effectively. (1) **Minehunting.**

Minehunting involves the use of **mine detection and neutralization systems** to counter individual sea mines. Minehunting is preferred to minesweeping if time permits. High-resolution sensors are used to locate mines. When located, **remote-controlled vehicles** or **EOD divers** visually identify the mines and plant charges to destroy them. Minehunting poses less risk to MCM forces, covers an area more thoroughly, and provides a higher probability of mine detection than minesweeping. (2) **Minesweeping.** Minesweeping is conducted by either **surface craft** or **aircraft** and involves the towing of mechanical, influence, or explosive sweep systems. **Mechanical sweeping** employs specially equipped cables to sever moored mine cables so that the mines float to the surface. The mines are then destroyed by explosive charge upon approval of the local commander. **Influence sweeping** involves the use of towed or streamed devices that emit acoustic, magnetic, or combination acoustic-magnetic signals to trigger influence-type mines. **Explosive sweeping** causes sympathetic



## COALITION MINE COUNTERMEASURE OPERATIONS

The US mine warfare concept [during DESERT STORM] was designed around a European war scenario which relied on North Atlantic Treaty Organization allies to participate substantially in mine warfare operations, especially in mine countermeasures (MCM). The Navy's MCM capabilities in the Persian Gulf consisted of surface mine countermeasures (SMCM), aviation mine countermeasures (AMCM), and explosive ordnance disposal (EOD) teams. SMCM capabilities included the newly commissioned *USS Avenger* (MCM1) class MCM ship and two 30-year-old *USS Aggressive* and *USS Acme* (MSO 422 and 508) class minesweepers. The AMCM capability consisted of six MH-53E AMCM helicopters. More than 20 US EOD teams and a 23-man Australian team also were deployed to neutralize or destroy detected mines.

Before the start of Operation DESERT STORM, the US ability to gather intelligence on Iraqi minefield locations, or observe and counter Iraqi minelaying activity in international waters (generally considered a hostile act under international law), was degraded by restrictions on naval and air operations in the northern Persian Gulf. To avoid any possibility of provoking Iraqi military action before Coalition defensive and later offensive preparations were complete, CINCCENT restricted naval surface forces in the Gulf to operating south of the 27°30'N parallel (approximately 72 miles south of the Kuwaiti-Saudi border) until early January [1991]. Similar restrictions kept the flight paths of aircraft south of 27°45'N (approximately 55 miles south of the Kuwait-Saudi border) unless tactically required to exceed that limit. Those restrictions precluded gathering intelligence on Iraqi mining activity and also prevented NAVCENT from acting to deter or counter Iraqi forces from setting mines adrift in the Gulf.

After the Royal Saudi Naval Force discovered the first drifting mine in December [1990], the US Mine Countermeasures Group (USMCMG) found and destroyed six drifting mines before Operation DESERT STORM started. On 24 January, the USMCMG left Abu Dhabi and conducted training and maintenance while en route to its designated MCM operating area in the northern Persian Gulf. On 14 February, the oceanographic survey vessel *HMS Herald* and five Royal Navy mine hunters joined the USMCMG. This task force started its MCM operations on 16 February, 60 miles east of the Kuwaiti coast, working initially to clear a 15-mile long, 1,000 yard wide path to a 10-mile by 3.5-mile FSA south of Faylaka Island.

**SOURCE:** Final Report to Congress  
Conduct of the Persian Gulf War, 1992

detonations in, damages, or displaces the mine. At present, the only method capable of activating a sophisticated pressure mine is the use of an actual ship. This is not a practical routine sweep method.

### b. Intelligence Support

- **Intelligence Gathering.** Before maritime MCMOPS, **intelligence may indicate the types, quantities, or locations of mine storage sites.** This



*Minesweeping is a method of active maritime countermeasure and is conducted by either surface craft or aircraft.*

information enables the surveillance of mine storage sites with overhead sensor systems and intelligence assets to detect movement of mine assets. All source-derived intelligence of mine movement to minelaying platforms and the subsequent movement of the minelaying platforms can provide advance information on the type, size, and location of enemy minefields. Where mining is a possible threat, particularly in areas of military operations other than war, **tracking and dedicated intelligence collection against this threat must begin early** and be regular enough to provide confident estimates of mine activity. A joint MCM tracking team could be established to focus collection efforts in this area.

- **Mine Exploitation.** A key to countering any mine is a detailed knowledge of the mine sensor and targeting circuitry. **All-source derived intelligence on the enemy minelaying operation can aid in determining the type of sensor and style of target processing used.** However, more accurate data can be acquired by actually exploiting a mine

recovered during MCMOPS. The mine exploitation may provide information on mine settings and mine modification intelligence.

c. **Planning Considerations.** The MCM planning process starts with an **estimate of the situation and a mission statement** and results ultimately in production of an **MCM tasking order**. Some aspects of the mission definition must be provided by the tasking commander.

- **Objectives.** The mission statement includes an **objective for active MCM**, an **acceptable risk factor**, and a **specific operation area**. In some cases, a measure of the effectiveness of the operation will be required. The MCM commander must choose a specific objective from the list in Figure IV-4 as described below.
  - **Exploratory.** The objective of exploration is to **determine whether or not mines are present**. This is usually the first objective when an enemy minefield is suspected. If no mines are found, the confidence level of search

## MARITIME MINE COUNTERMEASURE MISSION OBJECTIVES

### EXPLORATORY

Determine whether or not mines are present

### RECONNAISSANCE

Make a rapid assessment of mined area limits, types of mines, and numbers

### BREAKTHROUGH

Open channels and staging areas for amphibious operation or break-in and/or break-out of a port

### ATTRITION

Make continuous or frequent efforts to keep the threat of mines to ship traffic low

### CLEARANCE

Attempt to remove all mines from assigned areas

Figure IV-4. Maritime Mine Countermeasure Mission Objectives

accuracy is the measure of effectiveness. If mines are found, the operation usually transitions to a reconnaissance objective.

•• **Reconnaissance.** Reconnaissance operations are designed to **make a rapid assessment of the limits of a mined area and the estimated number and types of mines present.** The measure of effectiveness is normally a value judgment based on the degree of coverage for a given area using an established probability of detection.

•• **Breakthrough.** The breakthrough objective is directed when a **rapid operation is required to open channels and staging areas** for an amphibious operation or break-in and/or break-out of

a port. This objective would be selected when there is insufficient time or forces for high percentage clearance operations. For breakthrough operations, the tasking commander should indicate the amount of time available for MCMOPS. The MCM commander should respond with the following estimates: (1) **Initial threat to traffic that will remain** following the MCMOPS that can be conducted in the available time; and (2) **Additional reduction of the threat achievable** with additional time provided for MCMOPS.

•• **Attrition.** Attrition operations call for **continuous or frequent MCM efforts to keep the threat of mines to ship traffic as low as possible** when traffic

must continue to transit the mined waters for a comparatively long period of time. Attrition is employed when mines cannot be quickly cleared because of factors such as enemy minefield replenishment or use of mines with arming delay or high ship counter settings. The tasking commander should provide the MCM commander with a desired initial threat to shipping goal and require reporting of estimated attainment of that goal.

•• **Clearance.** The objective of clearing is to **remove all the mine threat from the assigned area**. Because it is difficult to ensure that all mines are cleared, a percentage goal is assigned for mine removal to permit the MCM commander to measure and report progress. For a clearing objective to be appropriate, MCM forces must be adequate to do the job in the time available, traffic through the field must be delayed until the clearance is completed, enemy replenishment of the field must be unlikely, and the majority of the mines must be vulnerable to at least one form of active MCM. Clearing assumes that the mine types are known or can be reasonably estimated. **A special case of the clearing objective is limited clearing, in which a minefield is cleared of only specified mine types.** Limited clearing may be directed if there are inadequate MCM forces to conduct clearing operations in the time available or if available countermeasures are not effective against all mine types in the field. If the characteristics of the mines in a field can only be assumed, partial clearing can be tailored to the type of ship that must transit the field.

- **Risk Directives.** Some MCM techniques are inherently risky when used against certain mine types. To determine the proper MCM technique to

employ, **the MCM commander must, in addition to an objective, be given some indication of the maximum acceptable degree of risk to MCM forces.** When operations are constrained by time, a somewhat greater degree of risk must be accepted to accomplish the objective.

- **MCM Asset Availability.** **MCM tactics are determined by the time and assets available.** The time required to move MCM units to the minefield area as opposed to the time available for completion of MCMOPS is a key determination. A primary mission of airborne MCM (AMCM) forces is to provide short-notice, rapid response to any mining threat. These forces sacrifice some degree of effectiveness and stamina to maximize response capability. On the other hand, **surface MCM (SMCM) forces** are more effective but, because of relatively slow transit speeds, have long response times. For long distances, heavy lift ships can transport SMCM units to the area of operations more quickly than the MCM ships could transit on their own. Whenever time and circumstances permit, **AMCM assets** should be used for precursory minefield sweeping before operating SMCM assets. This provides greater safety margins for surface craft, which lack the helicopter's relative immunity to mines.
- **Amphibious Operations.** MCM and amphibious breaching in support of amphibious operations need to be synchronized within the overall amphibious task force (ATF) timeline. Planning a successful MCM and/or amphibious breaching operation requires the combined efforts of the commander, ATF (CATF), commander, landing force (CLF), and MCM commander. Early dialogue between CATF, CLF, and the MCM commander will aid planners to

identify detailed mission requirements. These considerations include:

•• **Intelligence, Surveillance, and Reconnaissance.** A collection plan is a joint effort of the ATF intelligence organizations. Intelligence efforts should concentrate on establishing the type and location of the mine threat in the AOA, AOA characteristics, enemy locations, and intelligence on obstacles in the surf zone and beyond.

•• **Synchronization.** MCM and amphibious breaching operations require precise synchronization to ensure maximum effects of supporting arms and to minimize the risk to friendly forces. The determination of the ATF general COA dictates the size and composition of the landing force (LF) and the general location and number of lanes required. Lane requirements and enemy obstacle construction will dictate size and composition of the breach force. Reverse planning should be used to ensure that actions at the obstacles support action on the objective.

•• **Breaching Fundamentals.** Suppression, obscuration, security, and reduction are applied to all amphibious breaching operations to ensure success when breaching against a defending enemy.

•• **Organization.** ATF forces must be organized to quickly and effectively reduce obstacles and expedite LF movement to the objective. Forces should be task-organized into support, breach, and assault organizations.

•• **Command and Control.** Unity of command is critical in MCM and/or amphibious breaching operations. CATF, with the assistance of a breach force advisor from the CLF staff, executes the

clearance effort from the surf zone to the high water mark (HWM) and/or craft landing zone (CLZ) using task-organized Navy, SOF, and LF elements. The MCM commander mine clearance efforts begin at the seaward edge of the mine threat area to the surf zone, and the CLF task-organizes breaching elements in the assault waves to continue the breaching effort at the HWM, CLZs, and landing zones.

- **Support Requirements.** Deployed MCM ships and helicopter and EOD units are not self-sustaining. **Communications, ordnance, recompression chamber, supply, personnel support, and petroleum, oils, and lubricants must be provided for these units.** In addition, ships will require magnetic and acoustic calibration range services and intermediate maintenance support. Helicopter units will require hangar space, maintenance, and ground support equipment. Support may be provided to ships and EOD units by an assigned MCM support ship or an adjacent shore facility. Helicopter support may be provided by an adjacent airfield or by an air-capable MCM support ship. When operating near hostile enemy areas, force protection support requirements exist for all MCM platforms.

#### d. Organizational Support

- **Maritime Defense Zone Commands.** When activated, the maritime defense zone commanders Atlantic and Pacific are responsible to USCINACOM and USCINCPAC, respectively, for **integrated maritime defense operations, including mining and MCM**, within their respective US coastal and inland waterway regions. Operational forces will be allocated by

the fleet commanders and Coast Guard area commanders.

- **Commander, Mine Warfare Command.** COMINEWARCOM is responsible to the Chief of Naval Operations for **oversight of Navy mine warfare programs** and, through USCINACOM, for the **training and readiness of mine warfare forces**. These forces, which include AMCM, SMCM, and underwater mine countermeasures units as well as MCM commanders and staffs, are prepared to deploy on short notice to support any combatant command, as required. COMINEWARCOM supports these commanders in planning MCM exercises and operations.

e. **Operational Considerations.** When an enemy minefield is encountered, a number of decisions must be made. If the minefield is not on a primary SLOC or operational route, the best action may be to warn and divert shipping around the area. If the minefield is in an essential area, the decision must be made as to what type of MCM to employ. **The number and types of mines, availability of MCM forces, and time available will determine the type of MCM to employ.** It may also be possible to counter a minefield in a critical area by sending forces over it (e.g., vertical assault or vertical resupply) rather than through or around it.

- **Integrated Operations.** Integrated MCMOPS make optimum use of all available MCM assets and tactics to meet the needs of the mission. **Consideration must be given to both mutual support and mutual interference.** The MCM commander must consider the potential reduction of risk that could be made possible through the sequential application of an integrated force. Support from MCM helicopters may

significantly reduce the risk to SMCM vessels if shallow moored mines and sensitive influence mines are swept before the SMCM employment. However, if influence sweeping is performed concurrent with EOD operations, there may be a serious risk to EOD divers in close proximity as a result of sweep-generated mine detonations. **The MCM commander must plan operations to exploit the strong capabilities of each MCM element** and schedule events to accomplish the mission in the fastest manner consistent with the risk directive.

- **Multinational Force Coordination.** Enemy mining frequently results in a multinational MCM effort. It is possible to have MCMOPS conducted by several national forces in close proximity without having a single command structure. To conduct such operations safely and efficiently, **agreements to coordinate operational areas and communications, as a minimum, must be established to prevent mutual interference.**
- **Q-Routes and Route Survey.** A Q-route is a preplanned system of dormant shipping lanes that can be activated partially or totally by the area commander after it has been determined that mining has occurred. **The Q-route minimizes the area an MCM commander has to clear to provide safe passage for shipping and reduces the force required to conduct MCM.** Route survey operations are conducted along Q-routes during peacetime for several purposes. First, a survey is conducted to determine if the route is favorable for minehunting. If it is not, a change of route will be recommended. Next, the established route is surveyed to collect environmental data with which to support wartime operations. The route is then

periodically surveyed to locate, evaluate, and catalog minelike objects. This data base can be used in conflict to determine if mining has occurred and, if it has, to reduce the time required to clear the route.

- **Reporting Requirements.** The MCMOPS report is used to exchange MCM tactical information between all components and joint headquarters. It

provides the location and status of Service component MCMOPS, including breaching and clearing. It is also used to request, task, plan, report, modify, and approve MCMOPS, as appropriate. The report format is specified in MIL-STD-6040, "U.S. Message Text Formatting Program," and listed in Appendix A, "Mine, Countermine, and Obstacle Reports."

### OPERATION END SWEEP

Concurrent with the formal signing of the Paris Agreement on Ending the War and Restoring Peace in Vietnam on 27 January 1973, American and Vietnamese officials signed a separate, but directly related protocol providing for the US neutralization of mines in North Vietnam's waters. The attendant US Navy mineclearing operation was called Operation END SWEEP.

The significance of END SWEEP extended well beyond tactically clearing mines from Haiphong harbor. Indeed, the operation proved to be one of the few diplomatic tools remaining on the US side as the struggle in Indochina continued even after the signing of the cease-fire agreement.

Seen in this context, the US pledge at Paris to neutralize the thousands of mines American forces laid during the war assumed added significance. The mine clearance protocol was one of the few tools that the US administration possessed during 1973 to moderate Communist actions in Indochina. Indeed, the END SWEEP task force to clear mines from North Vietnamese waters may have been the most important factor that year in deterring large-scale Communist offensives.

In addition to the diplomatic aspects, END SWEEP, which lasted from 6 February to 18 July 1973, stands out as a unique US naval operation. Not since the effort at Wonsan during the first year of the Korean War had the Navy carried out such a major mine countermeasures mission. END SWEEP involved a total of 10 ocean minesweepers, 9 amphibious ships, 6 fleet tugs, 3 salvage ships, and 19 destroyers. Twenty-four CH-53D Sea Stallions from Marine helicopter squadrons HMM 165 and HHM 463 and another thirteen CH-53Ds from the Navy's Helicopter Mine Countermeasures Squadron 12 took part. With a herculean mobilization effort—a testament to organizational flexibility and able leadership—the Navy concentrated in the United States and the Western Pacific the necessary mine countermeasures forces, ships, aircraft, and equipment, trained the personnel for the task, and completed plans for its execution.



**END SWEEP** witnessed the first major operational employment of aircraft in support of mine clearance—airmobile mine countermeasures. Task Force 78 successfully tested new equipment, including the Mark 105 hydrofoil sled and the Magnetic Orange Pipe that the specially configured CH-53s towed to detect magnetic and acoustic mines. The Raydist “T” Precise Navigation System was another innovative device that passed the test during **END SWEEP**. Finally, the mine countermeasures warriors improved their tactics, techniques, and procedures for handling the “weapons that wait.”

The Navy’s 1973 experience off North Vietnam proved invaluable in the 1974 minesweeping of the Suez Canal and during Persian Gulf operations in 1987-88 and 1991. The Service gained a better understanding of how airborne countermeasures fit into mine warfare. **END SWEEP** showed that aircraft units were able to deploy quickly overseas, operate in relative safety from exploding ordnance, and detect shallow-water magnetic and acoustic mines. The Navy also learned that ocean minesweepers and other surface vessels were still essential for all-weather, day-night activity and dealing with pressure mines and deep-water moored mines.

Operation **END SWEEP** demonstrated persuasively that mine countermeasures was a valuable component of naval warfare and a useful instrument of American foreign policy.

**SOURCE:** Dr. Edward J. Marolda, “Operation **END SWEEP**,”  
Naval Historical Center, 1993



# APPENDIX A

## MINE, COUNTERMINE, AND OBSTACLE REPORTS

### 1. Land Forces Reports

Once emplaced, minefields are lethal and unable to distinguish between friend and enemy. For this reason, positive control and continuous flow of information is necessary. Reporting, recording, and marking of minefields must be performed using methods that are consistent and well understood. The basic differences between conventional and scatterable mines require that they be treated differently with respect to reporting, recording, and marking.

a. **Conventional Minefield Reporting.** A minefield report is an oral, electronic, or written communication concerning mining activities, friendly or enemy. These reports document information on friendly and enemy minefields. The information is transmitted through operation channels and furnished to intelligence staff officers. It is then processed, integrated with terrain intelligence, and disseminated through intelligence channels to affected units. Mandatory conventional minefield reports are:

- Report of Intention
- Report of Initiation
- Report of Completion

These reports will be submitted by the emplacing unit commanders through operations channels to the operations officer (J-3 and/or G-3) of the authorizing headquarters. That headquarters will integrate the reports with terrain intelligence and disseminate them through tactical intelligence. The reports should be sent by secure means.

- **Report of Intention.** The Report of Intention is made as soon as it is decided to lay the minefield. It doubles as a request when initiated at levels below those with authority to emplace. This report, when required, includes the following required data (STANAG 2036) on the proposed minefield:
  - Tactical purpose;
  - Type of minefield;
  - Estimated number and types of mines;
  - Whether mines are surface laid or buried;
  - Whether antihandling devices are used;
  - Location of minefield;
  - Location and width of lanes and gaps; and
  - Proposed date and time for starting and completing.

Conventional minefields which are part of an operation or general defense plan that has been approved by the authorizing commander do not require a Report of Intention. Their inclusions in such a plan implies an intention to lay.

- **Report of Initiation.** The Report of Initiation is a mandatory report made by the laying unit when installation begins. It informs higher headquarters that emplacement has begun and the area is no longer safe for friendly movement and maneuver.
  - **Report of Completion.** The Report of Completion is usually an oral report to the authorizing commander that the minefield is complete and functional. The Report of Completion is followed as rapidly as possible by the completed DA Form 1355 (Minefield Record) or DA Form 1355-1-R (Hasty Protective Minefield Record). Completion of the minefield records is the responsibility of the laying unit.
- b. **Scatterable Minefield Reporting.** Accurate, timely, and uniform reporting and dissemination of scatterable minefield emplacement information is a must. Fluid and fast-moving tactical situations require that complete information on scatterable mine employment be known and passed on in a simple, rapid manner to all units that could be affected. The variety of emplacing systems and emplacing units preclude the use of locally devised reporting and dissemination methods. Scatterable minefields must also be recorded to facilitate clearing. They need not be recorded in the detail required when emplacing conventional mines, since the locations of individual scatterable mines are unknown. Shown below is a relatively simple reporting procedure that will be used for scatterable mines. It is applicable for all delivery systems and can be sent in a voice, digital, or hard copy mode.

- Scatterable Minefield Report and Record Form (Front Side)

**LINE #    INFORMATION REQUIRED    DATA - INST ON BACK**

- 1    APPROVING AUTHORITY
- 2    TGT/ OBSTACLE #
- 3    TYPE EMPLACING SYSTEM
- 4    TYPE MINES
- 5    SELF-DESTRUCT PERIOD
- 6    AIM PT/CORNER PTS OF MINEFIELD
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15    SIZE SAFETY ZONE FROM AIM PT
- 16    UNIT EMPLACING MINES/RPT #
- 17    PERSON COMPLETING RPT
- 18    DTG OF REPORT
- 19    REMARKS

- Scatterable Minefield Report and Record Form (back side)

### LINE #

### INSTRUCTIONS

- 1 **Approving Authority.** Enter approving authority. *CDR 3AD*
- 2 **Target/Obstacle Number.** If the minefield is part of an obstacle plan, enter the obstacle number *2XXX0157*. This number represents 11 Corps, target number 157. If the minefield is not a part of an obstacle plan or does not have a number, then leave blank or enter *NA*.
- 3 **Type Emplacing System.** Enter the type system that emplaced the minefield, such as *ARTY, Volcano*.
- 4 **Type Mines.** Enter *AP* for antipersonnel mines, *AT* for antitank mines. If both, enter *AP/AT*.
- 5 **Self-Destruct Period.** Enter the time period in which the minefield will self-destruct.
- 6-14 **Aim Point/Corner Points of the Minefield.** If the system used to emplace the minefield uses a single aim point to deliver the mines, enter that aim point *MB 10102935*. If the system has distinct corner points such as *Volcano*, enter those corner points *MB 17954790, MB 18604860, MB 18504890, MB 18054895, MB 17804850*.
- 15 **Size Safety Zone from Aim Point.** If an aim point is given in Line 6, enter the size safety zone from that aim point. Example: Artillery emplaces a minefield from aim point *MB 10102935* and the safety zone is 1,000M x 1,000M, enter *500M* so that personnel plotting or receiving the information can plot the coordinate and go 500M in each direction from the aim point and plot the safety zone.
- 16 **Unit Emplacing Mines and Report Number.** *BCO 23ENGB BN 4*. Reports should be numbered consecutively. This would be the fourth minefield that B Company has emplaced.
- 17 **Person Completing the Report.** *SFC Hollind*
- 18 **Date-Time Group of Report.** *160735ZOCT96*
- 19 **Remarks.** Any other items the reporting unit may feel are important.

- Scatterable Minefield Report and Record Form (Sample)

**LINE # INFORMATION REQUIRED DATA - INST ON BACK**

1 APPROVING AUTHORITY 2BDE3AD  
2 TGT / OBSTACLE # NA  
3 TYPE EMPLACING SYSTEM Volcano  
4 TYPE MINES AT/AP  
5 SELF-DESTRUCT PERIOD 101630Z-102130ZOCT96  
6 AIM PT/CORNER PTS OF MINEFIELD  
7 MB 17955490  
8 MB 18604860  
9 MB 18504890  
10 MB 18054895  
11 MB 17804850  
12  
13  
14  
15 SIZE SAFETY ZONE FROM AIM PT NA  
16 UNIT EMPLACING MINES/RPT# BC023ENGR/4  
17 PERSON COMPLETING RPT 1LT JENNINGS  
18 DTG OF REPORT 051400ZOCT96  
19 REMARKS MINEFIELD AROUND TANK DITCH

• SCATMINEWARN

Units which may be affected by the emplacement of scatterable mines will need to receive a warning to alert them. This warning message may be disseminated prior to or after the mines are emplaced. Only the very basic information should be included to prevent tie up of communication systems. The following procedure is a convenient, easily sent message which provides the necessary information.

Scatterable Minefield Warning Report

LINE	MESSAGE
ALPHA	Emplacing System.
BRAVO	AT YES/NO
CHARLIE	YES/NO
DELTA	# aim points/corners points.
ECHO	Grid coordinates of aim points and/or corner points and size safety zone.
FOXTROT	DTG of self-destruct period

Examples of a warning message based upon the previous Scatterable Minefield Report and Record are as follows:

SCATMINEWARN (Example 1)	SCATMINEWARN (Example 2)
ALPHA <i>ARTY</i>	ALPHA <i>Volcano</i>
BRAVO <i>Yes</i>	BRAVO <i>Yes</i>
CHARLIE <i>Yes</i>	CHARLIE <i>Yes</i>
DELTA <i>One</i>	DELTA <i>Five</i>
ECHO <i>MB 10102935 500M</i>	ECHO <i>MB 17954790</i>
FOXTROT <i>081610Z-081900ZOCT96</i>	<i>MB 18604860</i>
	<i>MB 18504890</i>
	<i>MB 18054895</i>
	<i>MB 17804850</i>
	FOXTROT <i>101630Z-102130ZOCT96</i>

- Enemy Minefield Reporting and Recording

Any detection, encounter, or knowledge of enemy minefields or mining activities must be reported by the fastest reliable means. The report is made to the next higher commander, and must include all known information about the minefield. The report is normally made through operation channels. Specific information is outlined in STANAG 2096 and is as follows:

<b>LINE</b>	<b>INFORMATION</b>
ALPHA	Map sheet designation
BRAVO	Date and time of collection of information
CHARLIE	Type of minefield (AT, AP) (self-destructing)
DELTA	Coordinates of minefield extremities
ECHO	Depth of minefield
FOXTROT	Enemy weapons or surveillance
GOLF	Estimated time to breach minefield
HOTEL	Estimated material and equipment needed to breach minefield
INDIA	Routes for bypassing minefield (if any)
JULIET	Coordinates of lane entry (if any)
KILO	Coordinates of lane exit (if any)
LIMA	Width of lanes, in meters (if any)
ZULU	Other:

- UXO Spot Report

The UXO spot report is a detailed, swift, two-way reporting system that makes clear where the UXO hazard areas are, what their priorities are, and which units are affected by them. The report is used to request help in handling a UXO hazard that is beyond a unit's ability to handle and that affects the unit's mission. This report helps commanders set priorities based on the battlefield situation. The UXO spot report is the first-echelon report that is sent when a UXO is encountered. The report consists of nine lines and is sent by the fastest means available.

LINE #	INFORMATION
--------	-------------

- |    |   |
|----|---|
| 1. | <b>Date-Time Group:</b> DTG item was discovered   |
| 2. | <b>Reporting Activity:</b> (Unit identification code) and location (grid of UXO).   |
| 3. | <b>Contact Method:</b> Radio frequency, call sign, point of contact and telephone number.   |
| 4. | <b>Type of Ordnance:</b> Dropped, projected, placed or thrown. If available, supply the subgroup. Give the size of the hazard area. |
| 5. | <b>NBC Contamination:</b> Be as specific as possible.   |
| 6. | <b>Resources Threatened:</b> Report any equipment, facilities, or other assets that are threatened.                                 |
| 7. | <b>Impact on Mission:</b> Provide a short description of current tactical situation and how the presence of UXO affects mission.    |
| 8. | <b>Protective Measures:</b> Describe any measures you have taken to protect personnel and equipment.                                |
| 9. | <b>Recommended Priority:</b> Recommend a priority for response by EOD or engineers.   |

- US Message Text Format Messages:

UNCLASSIFIED MIL-STD-6040  
5.1.1 MESSAGE TEXT FORMATS  
IMPL DATE: 1 JANUARY 1997

(U) INDEX REFERENCE NUMBER: C114    STATUS: AGREED    DAT

MTF IDENTIFIER:        SIREP

MESSAGE TEXT FORMAT NAME:        SENSITIVE INFORMATION REPORT

FUNCTION OR PURPOSE: THE SIREP IS USED TO PROVIDE SENSITIVE INFORMATION ON EVENTS OR CONDITIONS THAT MAY HAVE A SIGNIFICANT IMPACT ON CURRENT PLANNING OF AN OPERATION, BUT OF LESS TIME CRITICALITY THAN A TACREP. THIS MESSAGE PROVES A SENSITIVE FILE MAINTENANCE UPDATE MECHANISM.

SPONSORS:    DIA

RELATED DOCUMENTS:

MESSAGE TEXT FORMAT:

<u>SEG</u>	<u>RPT</u>	<u>OCC</u>	<u>SETID</u>	<u>SEQ</u>	<u>FIELD OCCURRENCE</u>	<u>SET FORMAT NAME</u>
		(C)	EXER	1	/M/O//	EXERCISE IDENTIFICATION
	(0)	OPER	2	/M/O/O/O//		OPERATION IDENTIFICATIONDATA
	(M)	MSGID	3	/M/M/O/O/O/O//		SIREP
	(0)	REF	4	/M/M/M/M/O/O/*O//		REFERENCE
	(C)	AMPN	5	M//		AMPLIFICATION
	(C)	NARR	6	/M//		NARRATIVE INFORMATION
	(0)	COLINFO	7	/O/O/O/O//		COLLECTOR INFORMATION
	(C)	HEADING	8	/M//		GROUND ACTIVITY
	(C)	IEUNITEQ	9	/*M/M/M/M//		ENEMY UNIT AND EQUIPMENT
	(0)	IESTATUS	10	/*M/M/M/M/M/M//		ENEMY STATUS AND ACTIVITY INFORMATION
	(0)	IEEMTLOC	11	/*M/M/M/M/M/M//		LAST KNOWN ENEMY EMITTER LOCATION
	(0)	2EDES TIN	12	/*M/M/M//		ENEMY DESTINATION INFORMATION

CONTINUED ON NEXT PAGE



(C)	GENTEXT	13	/M/M//	GROUND ACTIVITY SUMMARY
(C)	HEADING	14	/M//	AIR ACTIVITY
(C)	2EACSTAT	15	/*M/M/M/M/M/M//	ENEMY AIRCRAFT STATUS
(O)	2EACLOC	16	/*M/M/M/M/M/M/M//	ENEMY AIRCRAFT LOCATION AND MOVEMENT INFO
(O)	2EACORD	17	/*M/M/M//	ENEMY AIRCRAFT ORDNANCE AND DESTINATION
(O)	2EDESTIN	18	/*M/M/M//	ENEMY DESTINATION INFORMATION
(C)	GENTEXT	19	/M/M//	AIR ACTIVITY SUMMARY
(C)	HEADING	20	/M//	MARITIME ACTIVITY
(C)	3MTGTQNT	21	/*M/M/M/M/M/M/M//	MARITIME TARGETS, QUANTITY AND TYPE
(O)	3MTGTDG	22	/*M/M/M/M/M//	MARITIME TARGET DESIGNATION
(O)	3MTGTLOC	23	/*M/M/M/M/M/M//	MARITIME TARGET LOCATION INFORMATION
(O)	3MTGTINF	24	/*M/M/M/O/M/M/M//	MARITIME TARGET INFORMATION
(O)	3MTGTACT	25	/*M/M/M/M//	MARITIME TARGET DESTINATION AND/OR ACTIVITY
(C)	GENTEXT	26	/M/M//	MARITIME ACTIVITY SUMMARY
(O)	GENTEXT	27	/M/M//	ENEMY COMMUNICATIONS ACTIVITY
(C)	HEADING	28	/M//	ENEMY LOSSES
(O)	ENLOS	29	/M/M/M/M/M/M/M//	ENEMY PERSONNEL LOSS COUNT
(O)	1CAPEQ	30	/*M/M/M/M//	COUNT OF EQUIPMENT CAPTURED
(C)	4DESEQ	31	/*M/M/M/M//	COUNT OF EQUIPMENT DESTROYED
(C)	4DAMEQ	32	*M/M/M/M//	COUNT OF EQUIPMENT DAMAGE
(C)	1ABANDEQ	33	/*M/M/M/M//	COUNT OF EQUIPMENT ABANDONED
(C)	GENTEXT	34	/M/M//	ENEMY LOSS SUMMARY
(C)	HEADING	35	/M//	FRIENDLY LOSSES
(O)	FRLOS	36	/M/M/M/M/M/M/M//	FRIENDLY PERSONNEL LOSS COUNT

CONTINUED ON NEXT PAGE

(0)	CAPEQ	37	/*M/M/M/M//	COUNT OF EQUIPMENT CAPTURED
(C)	4DESEQ	38	/*M/M/M/M//	COUNT OF EQUIPMENT DESTROYED
(C)	4DAMEQ	39	/*M/M/M/M//	COUNT OF EQUIPMENT DAMAGE
(C)	GENTEXT	40	/M/M//	FRIENDLY LOSS SUMMARY
(C)	HEADING	41	/M//	BARRIERS AND OBSTACLES
(0)	1BARRIER	42	/*M/M/M//	BARRIER OR OBSTACLE INFORMATION
(C)	HEADING	43	/M//	INSTALLATION DATA
(0)	7TGTTYPE	44	/*M/M/M/M/M//	TARGET TYPE, STATUS AND/OR LOCATION INFO
(C)	7AREANAM	45	/*M/M//	AREA NAME
(0)	GENTEXT	46	/M/M//	INSTALLATION ACTIVITY
(C)	HEADING	47	/M//	PERSONALITIES
(0)	8PERDAT	48	/*M/M/M/M/M//	ENEMY PERSONNEL PERSONAL DATA
(0)	DECL	49	/M//	MESSAGE DOWNGRADING OR DECLASSIFICATIOND.

## STRUCTURAL NOTATION:

1. (1) P ([2] e )
2. (3)F1 A “SIREP”
3. (5) M ((([4]F2 = FF646-1) L ([4] Q= 1))
4. (6) M ((([4] e> 1) ~ ( [4],NF2 = FF646-1))
5. (8) MP ([9] e )
6. (8)F1 A “GROUND ACTIVITY”
7. (9) M ((([10] 8) / ([11] D) / ([12] 0))
8. (10)F1 = [9]F1,N
9. (11)F1 = [9]F1,N
10. (12)F1 = [9]F1,N
11. (13) M ([9] 8)
12. (13)F1 A “GROUND ACTIVITY SUMMARY”
13. (14) MP ([15] S)
14. (14)F1 A “AIR ACTIVITY”
15. (15) M ((([16] 8) / ([17] @) / ([18] 8))
16. (16)F1 = [15]F1,N
17. (17)F1 = [15]F1,N

UNCLASSIFIED

FOR OFFICIAL USE ONLY MIL-STD-6040

5.1.1 MESSAGE TEXT FORMATS

IMPL DATE: 1 JANUARY 1997

(OU) INDEX REFERENCE NUMBER: C327      STATUS: AGREED D

MTF IDENTIFIER: MCMREP

MESSAGE TEXT FORMAT NAME: MCM REPORT

FUNCTION OR PURPOSE: THE MCMREP PROVIDES A SITUATION REPORT ON MCM OPERATIONS AND THE AREA IMPACTED BY PRESENT OR FUTURE MCM OPERATIONS.

SPONSORS:

RELATED DOCUMENTS: FOR FURTHER U.S. IMPLEMENTATION GUIDANCE, SEE JIEO CIRCULAR 9152, ITEMS 42 AND 51.

MESSAGE TEXT FORMAT:

<u>SEG</u>	<u>RPT</u>	<u>OCC</u>	<u>SETID</u>	<u>SEQ</u>	<u>FIELD OCCURRENCE</u>	<u>SET FORMAT NAME</u>
		(C)	EXER	1	/M/O//	EXERCISE
		(O)	OPER	2	/M/O/O/O//	IDENTIFICATION(0) OPERATION IDENTIFICATION DATA
	(M)	MSGID	3	/M/M/O/O/O/O/ /		MCMREP
*	(0)	REF	4	/M/M/M/M/O/O/*O//		REFERENCE
	(C)	AMPN	5	/M//		AMPLIFICATION
	(C)	NARR	6	/M//		NARRATIVE INFORMATION
*	(0)	MXPN	7	/M/M/O/O/O/O/O//		MINE EXPLOSION
	(0)	MDET DAT	8	/O/O/O/O/O/O//		MINE DETECTION DATA
*	(0)	MOPS	9	/M/O//		MCM OPERATIONS IN PROGRESS
	(0)	MTASK	10	/M/M/O/*O/O//		MCM TASK
*	(0)	MINE	11	/M/O/O/O/O/O/O//		MINE INFORMATION
*	(0)	MSUM	12	/M/O//		SUMMARY OF MINEFIELDS
*	(0)	MTYPE	13	/M/O//		TYPE OF MINE
	(0)	PGRSS	14	/MOOOOOOOOOO*O//		PROGRESS OF MCM TASK

CONTINUED ON NEXT PAGE

*	(0)	NOOP	15	/M/O/O/O//	SHIPS
					NON-OPERATIONAL
*	(0)	UWCOND	16	/M/O/O/O/O/O/O/O/O//	UNDERWATER
					CONDITIONS
	(0)	CONM-RK	17	/M/O/O/O//	CONTACT MARKER
	(0)	MZONE	18	/M/M/M/*O/O//	STATUS OF MINE
					ZONE
	(C)	AMPN	19	/M//	AMPLIFICATION
*	(M)	MBUOY	20	/M/O/O/O/O//	MCM BUOY
	(0)	MAP	21	/M/O/*O/O/O//	MAP DATA
					INFORMATION
	(0)	LOGSIT	22	/0/0/0/0/0/0//	LOGISTICS
					SITUATION
	(0)	ASORT	23	/0/0/0/0/0/0/0/0/0//	AIR SORTIE
	(C)	AMPN	24	/M//	AMPLIFICATION
	(0)	ASUM	25	/0/0/0/0//	AIR SUMMARY
	(0)	DIVDAT	26	/0/0/0/0/0//	DIVER DATA
	(0)	ENVIRN	27	/0/0/0/0//	ENVIRONMENT
	(0)	CHRON	28	/0/0/0/0/0/0/0/0//	CHRONOLOGY
	(0)	NAV	29	/O/O/O//	NAVIGATION
	(C)	AMPN	30	/M//	AMPLIFICATION
	(0)	AKNLDG	31	/M/*O//	ACKNOWLEDGMENT
					REQUIREMENT
	(0)	DECL	32	/M//	MESSAGE
					DOWNGRADING OR
					DECLASSIFICATIOND.

STRUCTURAL NOTATION:

- 1. (1) P ([2] @)
- 2. (3)F1 A “MCMREP”
- 3. (5) M ((([4]F2 = FF646-1) & ([4] e= 1) )
- 4. (6) M ((([4] e> 1) & ([4],NF2 = FF646-1))
- 5. (19) M ([18]F3 = “CLOSED”)
- 6. (24) M ([23]F2 = “99”)
- 7. (30) M ([29]F2 = “99”)

NATURAL LANGUAGE EQUIVALENT:

- 1. SET 1 (EXER) IS PROHIBITED, IF SET 2 (OPER) OCCURS.
- 2. SET 3 (MSGID) FIELD 1 MUST EQUAL “MCMREP.”
- 3. SET 5 (AMPN) IS MANDATORY, IF [SET 4 (REF) FIELD 2 EQUALS FFIRN/FUD 646-1 AND THE NUMBER OF OCCURRENCES OF SET 4 (REF) EQUALS 1].
- 4. SET 6 (NARR) IS MANDATORY, IF [THE NUMBER OF OCCURRENCES OF SET 4 (REF) IS GREATER THAN 1 AND FIELD 2 IN SOME OCCURRENCE OF SET 4 (REF) EQUALS FFIRN/FUD 646-1].

5. SET 19 (AM~N) IS MANDATORY, IF SET 18 (MZONE) FIELD 3 EQUALS "CLOSED."
6. SET 24 (AMPN) IS MANDATORY, IF SET 23 (ASORT) FIELD 2 EQUALS "99."
7. SET 30 (AMPN) IS MANDATORY, IF SET 29 (NAY) FIELD 2 EQUALS "99."

REMARKS:

THE PAGE MARKINGS ARE IN ACCORDANCE WITH THE RELATED DOCUMENT FOR THE AGGREGATE MESSAGE TEXT FORMAT.

REVISION DATE: 21 JUL 1995

FOR OFFICIAL USE ONLY  
UNCLASSIFIED MIL-STD- 6040  
5.1.1 MESSAGE TEXT FORMATS  
IMPL DATE: 1 JANUARY 1997

(U) INDEX REFERENCE NUMBER: C440      STATUS: AGREED    DAT

MTF IDENTIFIER: MINEOPS

MESSAGE TEXT FORMAT NAME: JOINT MINELAYING OPERATIONS

FUNCTION OR PURPOSE: THE MINEOPS IS USED FOR THE JOINT EXCHANGE OF INFORMATION ON THE LOCATION, CHARACTERISTICS, AND STATUS OF COMPONENT SERVICES' MINELAYING OPERATIONS. IT IS ALSO USED TO REQUEST, TASK, MODIFY, REPORT, PLAN, AND APPROVE MINELAYING OPERATIONS.

SPONSORS: USN/USAF

RELATED DOCUMENTS:

MESSAGE TEXT FORMAT:

<u>SEG</u>	<u>RPT</u>	<u>OCC</u>	<u>SETID</u>	<u>SEQ</u>	<u>FIELD OCCURRENCE</u>	<u>SET FORMAT NAME</u>
		(C)	EXER	1	/M/O//	EXERCISE
		(0)	OPER	2	/M/O/O/O//	IDENTIFICATION OPERATION IDENTIFICATION DATA
		(M)	MSGID	3	/M/M/O/O/O/O//	MINEOPS
	*	(0)	REF	4	/M/M/M/M/O/O/*O//	REFERENCE
		(C)	AMPN	5	/M//	AMPLIFICATION
		(C)	NARR	6	/M//	NARRATIVE
						INFORMATION
M		(M)	MWACT	7	/M//	MINE WARFARE OPERATIONS ACTIVITY
		(M)	MINEFLD	8	/M/M/M/M/M/*M//	MINEFIELD INFORMATION
[O						
	*	(0)	MAP	9	/M/O/*O/O/O//	MAP DATA INFORMATION
[[		(C)	POMOE	10	/MMMMMMMOO/O/O//	PLANNED OVERALL MEASURE OF EFFECTIVENESS

CONTINUED ON NEXT PAGE

[[	(M)	5TIME	11	/*MMMMMMMMMO/C//	MINEFIELD TIME AND STATUS INFORMATION	
[[	(0)	5MFLD	12	/*M/M/M/O/O/O/C/O//	MINEFIELD INFORMATION	
[[	*	(0)	MDELTYP	13	/M/M/M/M//	MINE DELIVERY AND TYPE
[[	*	(0)	UNITDES	14	/M/M/M/O//	MINELAYING UNIT DESIGNATOR INFORMATION
[[	(0)	5MLINE	15	/*M/M/M/M/M/M/	MINELINES	
[[	(0)	5MLOC	16	/*M/M/M/O/C//	MINE LOAD LOCATION	
[[	*	(C)	MCPOS	17	/M/M/M/M/M/M/O//	MINE CASE AND POSITION
[					END OF SEGMENT	
					END OF SEGMENT	
	(0)	DECL	18	/M//	MESSAGE DOWNGRADING OR DECLASSIFICATION D.	

STRUCTURAL NOTATION:

1. (1) P ([2] @ )
2. (3) F1 A "MINEOPS"
3. (5) M (([4]F2 = FF646-1) & ([4] Q= 1))

UNCLASSIFIED UNCLASSIFIED MIL-STD-6040  
5.1.1 MESSAGE TEXT FORMATS  
IMPL DATE: 1 JANUARY 1997

(U) INDEX REFERENCE NUMBER: C441 STATUS: AGREED

MTF IDENTIFIER: MCMOPS

MESSAGE TEXT FORMAT NAME: JOINT MINE COUNTERMEASURES  
OPERATIONS

FUNCTION OR PURPOSE: THE MCMOPS IS USED FOR THE JOINT EXCHANGE  
OF INFORMATION ON THE LOCATION AND STATUS OF COMPONENT  
SERVICES MINE COUNTERMEASURES (MCM) OPERATIONS. IT IS ALSO  
USED TO REQUEST, TASK, PLAN, REPORT, MODIFY, AND APPROVE  
MINE COUNTERMEASURES OPERATIONS.

SPONSORS: USN/USAF

RELATED DOCUMENTS:

MESSAGE TEXT FORMAT:

SEG	RPT	OCC	SETID	SEQ	FIELD OCCURRENCE	SET FORMAT NAME
		(C)	EXER	1	/M/O//	EXERCISE IDENTIFICATION
		(O)	OPER	2	/M/O/O/O//	OPERATION IDENTIFICATION DATA
		(M)	MSGID	3	/M/M/O/O/O/O//	MCMOPS
	*	(O)	REF	4	/M/M/M/M/O/O/*O//	REFERENCE
		(C)	AMPN	5	/M//	AMPLIFICATION
		(C)	NARR	6	/M//	NARRATIVE INFORMATION
M		(M)	MWACT	7	/M//	MINE WARFARE OPERATIONS ACTIVITY
[M		(M)	MCMACT	8	/MMMMOOOOOOO*O//	MINE COUNTERMEASURES ACTIVITY
[[	*	(O)	MAP	9	/M/O/*O/O/O//	MAP DATA INFORMATION
[[	*	(C)	VESVEH	10	/M/M/*M/M//	VESSEL/VEHICLE IDENTIFICATION
[[	*	(O)	MDA	11	/O/*O/O//	MINE DANGER AREA

CONTINUED ON NEXT PAGE



[[	*	(0)	SAFELANE	12	/M/M/M/M/M/O/*M//	LANE OF SAFE
						PASSAGE
[[	*	(0)	LDTHCORD	13	/M/M/M/*M//	LEAD-THROUGH
						COORDINATION
[						END OF SEGMENT
						END OF SEGMENT
[		(0)	DECL	14	/M//	MESSAGE
						DOWNGRADING OR DECLASSIFICATION D.

STRUCTURAL NOTATION:

- 1. (1) P ([2] @)
- 2. (3)F1 A “MCMOPS”
- 3. (5) M ((([4]F2 = FF646-1) & ([4] Q= 1))
- 4. (6) M ((([4] @> 1) & ([4],NF2 = FF646-1))
- 5. (10) M ([12] @)

NATURAL LANGUAGE EQUIVALENT:

UNCLASSIFIED

Intentionally Blank

## APPENDIX B

### REFERENCES

The development of Joint Pub 3-15 is based upon the following primary references:

#### 1. Joint Publications

- a. Joint Pub 0-2, “Unified Action Armed Forces (UNAAF).”
- b. Joint Pub 1-01, “Joint Publication System, Joint Doctrine and Joint Tactics, Techniques, and Procedures Development Program.”
- c. Joint Pub 1-02, “DOD Dictionary of Military and Associated Terms.”
- d. Joint Pub 2-0, “Doctrine for Intelligence Support to Joint Operations.”
- e. Joint Pub 2-01.3, “Joint Tactics, Techniques, and Procedures for Joint Intelligence Preparation of the Battlespace.”
- f. Joint Pub 3-0, “Doctrine for Joint Operations.”
- g. Joint Pub 3-02, “Joint Doctrine for Amphibious Operations.”
- h. Joint Pub 3-02.1, “Joint Doctrine for Landing Force Operations.”
- i. Joint Pub 3-03, “Doctrine for Joint Interdiction Operations.”
- j. Joint Pub 3-04, “Doctrine for Joint Maritime Operations (AIR).”
- k. Joint Pub 3-05, “Doctrine for Joint Special Operations.”
- l. Joint Pub 3-06, “Doctrine for Joint Riverine Operations.”
- m. Joint Pub 3-07, “Joint Doctrine for Military Operations Other Than War.”
- n. Joint Pub 3-07.6, “Joint Tactics, Techniques, and Procedures for Foreign Humanitarian Assistance.”
- o. Joint Pub 3-09, “Doctrine for Joint Fire Support.”
- p. Joint Pub 3-10, “Doctrine for Joint Rear Area Operations.”
- q. Joint Pub 3-10.1, “Joint Tactics, Techniques, and Procedures for Base Defense.”
- r. Joint Pub 3-11, “Joint Doctrine for Nuclear, Biological, and Chemical (NBC) Defense.”
- s. Joint Pub 3-34, “Engineer Doctrine for Joint Operations.”

- t. Joint Pub 3-54, “Joint Doctrine for Operations Security.”
- u. Joint Pub 4-0, “Doctrine for Logistic Support of Joint Operations.”
- v. Joint Pub 5-0, “Doctrine for Planning Joint Operations.”
- w. Joint Pub 5-00.2, “Joint Task Force Planning Guidance and Procedures.”
- x. CJCS Instruction 3121.01, “Standing Rules of Engagement for US Forces.”
- y. CJCS Manual 3122.03, “Joint Operation Planning and Execution System Vol II: (Planning Formats and Guidance).”

## 2. Multi-Service

- a. NWP 1-14M / MCWP 5-2.1, “The Commander’s Handbook on the Law of Naval Operations.”
- b. NWP 3-06M/FMFM 7-5, “Doctrine for Navy/Marine Corps Joint Riverine Operations.”
- c. NWP 3-15/MCWP 3-3.1.2 “Mine Warfare.”
- d. TRADOC Pam 525-43/TAC Pam 50-27, “Military Operations: US Joint Operational Concept and Procedures for Coordination of Employment of Air Delivered Mines (J Mine).”
- e. Variable Message Format (VMF) Message Number K05.16, “Land Minefield Laying Report,” TIDP-TE, Volume III, Annex A.

## 3. US Army

- a. FM 3-100, “NBC Defense, Chemical Warfare, Smoke, and Flame Operations.”
- b. FM 5-10, “The Engineer Platoon.”
- c. FM 5-34, “Engineer Field Data.”
- d. FM 5-71-100, “Division Engineer Combat Operations.”
- e. FM 5-71.2, “Armored Task Force Engineer Combat Operations.”
- f. FM 5-71.3, “Brigade Engineer Combat Operations (Armored).”
- g. FM 5-100, “Engineer Combat Operations.”
- h. FM 5-100-15, “Corps Engineer Operations.”
- i. FM 5-103, “Survivability.”

- j. FM 5-116, "Engineer Operations, Echelons Above Corps."
- k. FM 5-250, "Explosives and Demolitions."
- l. FM 6-20, "Fire Support in the Air Land Battle."
- m. FM 6-20-30, "Fire Support for Corps and Division Operations."
- n. FM 20-32, "Mine/Countermine Operations."
- o. FM 27-10, "Law of Land Warfare."
- p. FM 71-100, "Divisions Operations."
- q. FM 90-7, "Combined Arms Obstacle Integration."
- r. FM 90-13, "Combined Arms River Crossing Operations."
- s. FM 90-13-1, "Combined Arms Breaching Operations."
- t. FM 100-5, "Operations."
- u. FM 100-7 (Draft), "The Army in Theater Operations."
- v. FM 100-15, "Corps Operations."
- w. FM 101-5-1, "Operational Terms and Symbols."
- x. TC 5-250.1, "Modernized Demolition Initiator."
- y. TRADOC Pam 525-18, "Military Operations: US Army Operational Concepts for Countermining Operations."
- z. TRADOC Pam 525-19, "USA Operational Concept for Land Mine Warfare."

#### **4. US Navy**

- a. NDP 1-14, "Naval Warfare."
- b. NWP 1-03.1, "Operational Reports."
- c. NWP 1-14M / MCWP 5-2.1, "Commander's Handbook on the Law of Naval Operations."
- d. NWP 3-02.4, "Explosive Ordnance Disposal."
- e. NWP 3-05, "Naval Special Warfare."

- f. NWP 3-10, “Naval Coastal Warfare Doctrine.”
- g. NWP 3-15, “Mine Warfare.”
- h. NWP 3-15.2.1, “Mine Countermeasures Operations.”
- i. NWP 3-15.2.2, “Airborne Mine Countermeasures Operations.”
- j. NWP 3-15.3, “Mining Operations.”
- k. NWP 3-15.4.1, “Mine Countermeasures Planning and Procedures.”
- l. NWP 3-15.4.1, VOL I, “Mine Countermeasures Planning and Procedures (Data Appendices).”
- m. NWP 3-15.4.2, “Minefield Planning.”
- n. NWP 3-56, “Composite Warfare Commander’s Manual.”
- o. NWP 5-00.3M, “The Amphibious Task Force Plan.”
- p. NWP 5-01, “Naval Operational Planning.”

## 5. US Air Force

- a. AFDD 1, “Air Force Basic Doctrine.”
- b. AFDD 1-1, “Air Force Task List.”
- c. AFDD 2, “Organization & Employment.”
- d. AFDD 2-1.3, “Counterland.”
- e. AFDD 2-1.4, “Countersea.”
- f. AFDD 2-5, “Information Operations.”

## 6. US Marine Corps

- a. MCDP 1, “Warfighting.”
- b. MCDP 1-2, “Campaigning.”
- c. MCDP 4, “Logistics.”
- d. MCWP 3-1, “Ground Combat Operations.”

- e. MCWP 3-16.2, “TTP for Fire Support Coordination.”
- f. MCWP 3-17, “Engineer Operations.”
- g. MCWP 5-1, “Marine Corps Planning.”

## 7. NATO

- a. ATP 1(C), Vol I, “Allied Maritime Tactical Instructions.”
- b. ATP 6A (Navy) (Air), Vol I, “Allied Doctrine of Mine Warfare, Policies, and Principles.”
- c. ATP 8(A), “Doctrine for Amphibious Operations.”
- d. ATP 24(A) (Navy), “Tactical Instructions and Procedures for the Conduct of Mine Warfare Operations.”
- e. ATP 37, “Supporting Arms in Amphibious Operations.”
- f. STANAG 1242, “Allied Doctrine of Mine Warfare Policy and Principles.”
- g. STANAG 1257, “NATO Mine Delivery Systems.”
- h. STANAG 1323, “NATO Minefield Planning Guidance.”
- i. STANAG 1400, “Mining and Minelaying - Planning and Evaluation, Tactics, and Execution.”
- j. STANAG 2017, “Orders to the Demolition Commander and the Demolition Firing Commander.”
- k. STANAG 2036, “Land Minefield Laying, Marking, Recording and Reporting Procedures.”
- l. STANAG 2096, “Reporting Engineer Information in the Field.”
- m. STANAG 2123, “Obstacle Folder.”
- n. STANAG 2394, ATP 52, “Land Force Combat Engineer Doctrine.”
- o. STANAG 2889, “Marking of Hazardous Areas and Routes Through Them.”
- p. STANAG 2963, “Coordination of Field Artillery Delivered Scatterable Mines.”
- q. STANAG 2990, “Principles and Procedures for the Employment in Land Warfare of Scatterable Mines With a Limited Laid Life.”

- r. STANAG 2991, “NATO Glossary of Combat Engineer Terms and Definitions-AAP-19.”
- s. STANAG 2991, AAP 19, “NATO Combat Engineer Glossary.”



# APPENDIX C

## ADMINISTRATIVE INSTRUCTIONS

### 1. User Comments

Users in the field are highly encouraged to submit comments on this publication to the United States Atlantic Command Joint Warfighting Center, Attn: Doctrine Division, Fenwick Road, Bldg 96, Fort Monroe, VA 23651-5000. These comments should address content (accuracy, usefulness, consistency, and organization), writing, and appearance.

### 2. Authorship

The lead agent for this publication is the US Army. The Joint Staff doctrine sponsor for this publication is the Director for Operational Plans and Interoperability (J-7).

### 3. Supersession

This publication supersedes Joint Pub 3-15, 30 June 93, "Joint Doctrine for Barriers, Obstacles, and Mine Warfare."

### 4. Change Recommendations

- a. Recommendations for urgent changes to this publication should be submitted:

TO: CSA WASHINGTON DC//DAMO-FDQ//  
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Routine changes should be submitted to the Director for Operational Plans and Interoperability (J-7), JDD, 7000 Joint Staff Pentagon, Washington, DC 20318-7000.

- b. When a Joint Staff directorate submits a proposal to the Chairman of the Joint Chiefs of Staff that would change source document information reflected in this publication, that directorate will include a proposed change to this publication as an enclosure to its proposal. The Military Services and other organizations are requested to notify the Director, J-7, Joint Staff, when changes to source documents reflected in this publication are initiated.

- c. Record of Changes:

CHANGE NUMBER	COPY NUMBER	DATE OF CHANGE	DATE ENTERED	POSTED BY	REMARKS

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# GLOSSARY

## PART I — ABBREVIATIONS AND ACRONYMS

AMCM	airborne mine countermeasures
AOA	amphibious objective area
ATF	amphibious task force
C2	command and control
CATF	commander, amphibious task force
CCW	1980 United Nations Convention on Conventional Weapons
CJCS	Chairman of the Joint Chiefs of Staff
CLF	commander, landing force
CLZ	craft landing zone
COA	course of action
COMINEWARCOM	Commander, Mine Warfare Command
DA	Department of Army
EOD	explosive ordnance disposal
FFE	flame field expedients
FM	field manual
FWF	former warring factions
HN	host nation
HWM	high water mark
JFACC	joint force air component commander
JFC	joint force commander
JTCB	Joint Targeting Coordination Board
LF	landing force
LOC	line of communications
MCM	mine countermeasures
MCMOPS	mine countermeasures operations
MFPF	minefield planning folder
MINEOPS	joint minelaying operations
NCA	National Command Authorities
NWP	naval warfare publication
OPLAN	operation plan
OPORD	operation order
PIR	priority intelligence requirements

## Glossary

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ROE	rules of engagement
SCATMINEWARN	scatterable minefield warning
SEAD	suppression of enemy air defenses
SLOC	sea line of communication
SMCM	surface mine countermeasures
SOF	special operations forces
STANAG	standardization agreement (NATO)
TMD	theater missile defense
UN	United Nations
USAF	United States Air Force
USCINACOM	Commander in Chief, United States Atlantic Command
USCINCPAC	Commander in Chief, United States Pacific Command
UXO	unexploded explosive ordnance
VMF	variable message format
WMD	weapons of mass destruction

## PART II — TERMS AND DEFINITIONS

**acoustic mine.** A mine with an acoustic circuit which responds to the acoustic field of a ship or sweep. (Joint Pub 1-02)

**attrition sweeping.** The continuous sweeping of minefields to keep the risk of mines to all ships as low as possible. (Joint Pub 1-02)

**barrier.** A coordinated series of obstacles designed or employed to channel, direct, restrict, delay, or stop the movement of an opposing force and to impose additional losses in personnel, time, and equipment on the opposing force. Barriers can exist naturally, be manmade, or a combination of both. (Joint Pub 1-02)

**barrier, obstacle, and mine warfare plan.** A comprehensive, coordinated plan that includes responsibilities, general location of unspecified and specific barriers, obstacles, and minefields, special instructions, limitations, coordination, and completion times. The plan may designate locations of obstacle zones or belts. It is normally prepared as an annex to a campaign plan, operation plan, or operation order. (Joint Pub 1-02)

**bottom mine.** A mine with negative buoyancy which remains on the seabed. Also called ground mine. (Joint Pub 1-02)

**clearing operation.** An operation designed to clear or neutralize all mines and obstacles from a route or area. (Joint Pub 1-02)

**controllable mine.** A mine which after laying can be controlled by the user, to the extent of making the mine safe or live, or to fire the mine. (Joint Pub 1-02)

**conventional mines.** Land mines, other than nuclear or chemical, which are not designed to self-destruct. They are designed to be

emplaced by hand or mechanical means. Conventional mines can be buried or surface laid and are normally emplaced in a pattern to aid in recording. (Joint Pub 1-02)

**defensive minefield.** 1. In naval mine warfare, a minefield laid in international waters or international straits with the declared intention of controlling shipping in defense of sea communications. 2. In land mine warfare, a minefield laid in accordance with an established plan to prevent a penetration between positions and to strengthen the defense of the positions themselves. (Joint Pub 1-02)

**denial measure.** An action to hinder or deny the enemy the use of space, personnel, or facilities. It may include destruction, removal, contamination, or erection of obstructions. (Joint Pub 1-02)

**enabling mine countermeasures.** Countermeasures designed to counter mines once they have been laid. This includes both passive and active mine countermeasures. (Joint Pub 1-02)

**exploratory hunting.** In naval mine warfare, a parallel operation to search sweeping, in which a sample of the route or area is subjected to minehunting procedures to determine the presence or absence of mines. (Joint Pub 1-02)

**flame field expedients.** Simple, handmade devices used to produce flame or illumination. Also called FFE. (This term and its definition modify the existing term and its definition and are approved for inclusion in the next edition of Joint Pub 1-02.)

**floating mine.** In naval mine warfare, a mine visible on the surface. (Joint Pub 1-02)

**influence mine.** A mine actuated by the effect of a target on some physical condition in the vicinity of the mine or on radiations emanating from the mine. (Joint Pub 1-02)

**magnetic mine.** A mine which responds to the magnetic field of a target. (Joint Pub 1-02)

**mine.** 1. In land mine warfare, an explosive or other material, normally encased, designed to destroy or damage ground vehicles, boats, or aircraft, or designed to wound, kill, or otherwise incapacitate personnel. It is designed to be detonated by the action of its victim, by the passage of time, or by controlled means. 2. In naval mine warfare, an explosive device laid in the water with the intention of damaging or sinking ships or of deterring shipping from entering an area. The term does not include devices attached to the bottoms of ships or to harbor installations by personnel operating underwater, nor does it include devices which explode immediately on expiration of a predetermined time after laying. (This term and its definition modify the existing term and its definition and are approved for inclusion in the next edition of Joint Pub 1-02.)

**mine countermeasures.** All methods for preventing or reducing damage or danger from mines. Also called MCM. (This term and its definition modify the existing term and its definition and are approved for inclusion in the next edition of Joint Pub 1-02.)

**minefield.** 1. In land warfare, an area of ground containing mines emplaced with or without a pattern. 2. In naval warfare, an area of water containing mines laid with or without a pattern. (This term and its definition modify the existing term and its definition and are approved for inclusion in the next edition of Joint Pub 1-02.)

**minefield density.** In land mine warfare, the average number of mines per meter of minefield front, or the average number of mines per square meter of minefield. (Joint Pub 1-02)

**minefield lane.** A marked lane, unmined, or cleared of mines, leading through a minefield. (Joint Pub 1-02)

**minefield marking.** Visible marking of all points required in laying a minefield and indicating the extent of such minefields. (Joint Pub 1-02)

**minefield record.** A complete written record of all pertinent information concerned on a minefield, submitted on a standard form by the officer in charge of the laying operations. (Joint Pub 1-02)

**minefield report.** An oral, electronic, or written communication concerning mining activities, friendly or enemy, submitted in a standard format by the fastest secure means available. (Joint Pub 1-02)

**minehunting.** Employment of sensor and neutralization systems, whether air, surface, or subsurface, to locate and dispose of individual mines. Minehunting is conducted to eliminate mines in a known field when sweeping is not feasible or desirable, or to verify the presence or absence of mines in a given area. (Joint Pub 1-02)

**minesweeping.** The technique of clearing mines using either mechanical, explosive, or influence sweep equipment. Mechanical sweeping removes, disturbs, or otherwise neutralizes the mine; explosive sweeping causes sympathetic detonations in, damages, or displaces the mine; and influence sweeping produces either the acoustic and/or magnetic influence required to detonate the mine. (Joint Pub 1-02)

**mine warfare.** The strategic, operational, and tactical use of mines and mine countermeasures. Mine warfare is divided into two basic subdivisions: the laying of mines to degrade the enemy's capabilities to wage land, air, and maritime warfare; and the countering of enemy-laid mines to permit friendly maneuver or use of selected land or sea areas. (Joint Pub 1-02)

**mine weapons.** The collective term for all weapons which may be used in mine warfare. (Joint Pub 1-02)

**moored mine.** A contact or influence-operated mine of positive buoyancy held below the surface by a mooring attached to a sinker or anchor on the bottom. (Joint Pub 1-02)

**numbered fleet.** A major tactical unit of the Navy immediately subordinate to a major fleet command and comprising various task forces, elements, groups, and units for the purpose of prosecuting specific naval operations. (Joint Pub 1-02)

**obstacle.** Any obstruction designed or employed to disrupt, fix, turn, or block the movement of an opposing force, and to impose additional losses in personnel, time, and equipment on the opposing force. Obstacles can exist naturally or can be manmade, or can be a combination of both. (Joint Pub 1-02)

**obstacle belt.** A brigade-level command and control measure, normally given graphically, to show where within an obstacle zone the ground tactical commander plans to limit friendly obstacle employment and focus the defense. It assigns an intent to the obstacle plan and provides the necessary guidance on the overall effect of obstacles within a belt. (Joint Pub 1-02)

**obstacle restricted areas.** A command and control measure used to limit the type or number of obstacles within an area. (Joint Pub 1-02 )

**obstacle zone.** A division-level command and control measure, normally done graphically, to designate specific land areas where lower echelons are allowed to employ tactical obstacles. (Joint Pub 1-02)

**offensive minefield.** In naval mine warfare, a minefield laid in enemy territorial water or waters under enemy control. (Joint Pub 1-02)

**phoney minefield.** An area free of live mines used to simulate a minefield, or section of a minefield, with the object of deceiving the enemy. (Joint Pub 1-02)

**pressure mine.** 1. In land mine warfare, a mine whose fuse responds to the direct pressure of a target. 2. In naval mine warfare, a mine whose circuit responds to the hydrodynamic pressure field of a target. (Joint Pub 1-02)

**proactive mine countermeasures.** Measures intended to prevent the enemy from successfully laying mines. (Joint Pub 1-02)

**protective minefield.** 1. In land mine warfare, a minefield employed to assist a unit in its local, close-in protection. 2. In naval mine warfare, a minefield laid in friendly territorial waters to protect ports, harbors, anchorages, coasts and coastal routes. (Joint Pub 1-02)

**Q-route.** A system of preplanned shipping lanes in mined or potentially mined waters used to minimize the area the mine countermeasures commander has to keep clear of mines to provide safe passage for friendly shipping. (Joint Pub 1-02)

**reduction.** The creation of lanes through a minefield or obstacle to allow passage of the attacking ground force. (Joint Pub 1-02)

**reinforcing obstacles.** Those obstacles specifically constructed, emplaced, or detonated through military effort and designed to strengthen existing terrain to disrupt, fix, turn, or block enemy movement. (Joint Pub 1-02)

**reserved obstacles.** Those demolition obstacles that are deemed critical to the plan for which the authority to detonate is reserved by the designating commander. (Joint Pub 1-02)

**scatterable mine.** In land mine warfare, a mine laid without regard to classical pattern and which is designed to be delivered by aircraft, artillery, missile, ground dispenser, or by hand. Once laid, it normally has a limited life. (Joint Pub 1-02)

**search sweeping.** In naval mine warfare, the operation of sweeping a sample of route or area to determine whether poised mines are present. (Joint Pub 1-02)

**ship counter.** In naval mine warfare, a device in a mine which prevents the mine from detonating until a preset number of actuations has taken place. (Joint Pub 1-02)

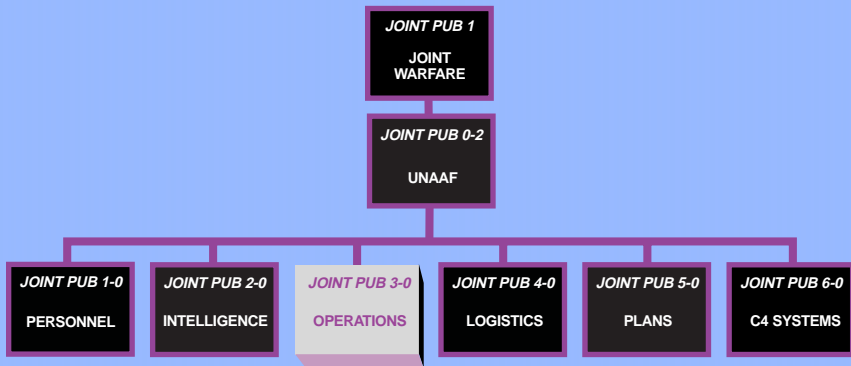
**strategic mining.** A long-term mining operation designed to deny the enemy the use of specific sea routes or sea areas. (Joint Pub 1-02)

**tactical obstacles.** Those obstacles employed to disrupt enemy formations, to turn them into a desired area, to fix them in position under direct and indirect fires, and to block enemy penetrations. (Joint Pub 1-02)

**unexploded explosive ordnance.** Explosive ordnance which has been primed, fused, armed or otherwise prepared for action, and which has been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel or material and remains unexploded either by malfunction or design or for any other cause. Also called UXO. (This term and its definition modify the existing term and its definition and are approved for inclusion in the next edition of Joint Pub 1-02.)



# JOINT DOCTRINE PUBLICATIONS HIERARCHY



All joint doctrine and tactics, techniques, and procedures are organized into a comprehensive hierarchy as shown in the chart above. **Joint Pub 3-15** is in the **Operations** series of joint doctrine publications. The diagram below illustrates an overview of the development process:

